A top NASA official discusses the imperative of a manned space program

Philip E. Culbertson is Associate Deputy Administrator of the National Aeronautics and Space Administration. He is responsible, on special assignment to the administrator, for the development of NASA's next-step Earth-orbiting space station.

Culbertson was interviewed in his Washington, D.C. office by EIR *Science and Technology Editor Marsha Freeman on July 12, several days after the July 4 space policy speech by President Reagan. In his statement the President alluded to a "permanent manned presence in space," which is described in this interview as the necessary next step in NASA's manned space program.*

EIR: What is your reaction to, and evaluation of, the President's speech on space on July 4?

Culbertson: I feel that it was as strong an endorsement as we had any reason to expect and, therefore, we were very pleased that he referred to a permanent presence [in space] at all. . . . We know that he was extremely enthusiastic about the day [the Shuttle landing] and that he is enthusiastic about space, but he has a very difficult economic problem to solve, and where they conflict, things will probably go in favor of the economic program. But I am satisfied that to the degree that his overall program can stand the expenditures of a strengthened space program we will continue to get very good support from the President.

EIR: How much leeway does his support for a "permanent presence in space" give NASA in terms of continuing the study of a space station, and going into the fiscal year 1984 budget negotiations, with support from the White House?

Culbertson: It gives us all the leeway we want. We will certainly continue to carry out the studies and analyses that have been going on within the agency, which have been focused at a high-level intensity effort for the last four to five months. I am satisfied now that we can go to the President and say, "Mr. President, we believe that this is the next way for the program to go" and it is consistent with the position that he made at the landing.

EIR: Do you think the design for a space station has evolved to the point where you could say, "This is what we would like to build"?

Culbertson: In the sequence of developing a deeper understanding of what the space station is all about, we probably have another year to year and a half before we can go to him with a configuration of what we think we ought to build. I believe that we can, within the next six months, go to him and say, "Mr. President, this is the capability which we believe the system should have"—the system which we will further define from an engineering standpoint over the next year and come forth with as a hardware proposal, rather than a capability proposal. But we are not and cannot be in a position in the next four to five months of giving a detailed drawing of what we want to build.

EIR: Why is NASA making this space-station initiative the most important aspect for the future of the manned space program?

Culbertson: We believe that by the year 1990, the Space Shuttle having flown then for nine years, that we will need the capability both to stay on orbit with man and the capability to use low-Earth orbit space to get more efficiently to the higher, geosynchronous orbit, than the Shuttle will provide. There is nothing magic about being ready in 1990 or 1989 or 1991, but for a number of reasons we think that's the right time—we shouldn't delay any longer. The idea of a space station, besides being very old, was very solid in 1970 when we started the detailed work on the Space Shuttle. The Space Shuttle and the space station were considered a matched pair.

There was a big debate about which one we should proceed with first, and in retrospect, it appears to me that the Russians were asking themselves the same question. We decided to start with the logistics and they decided to start with the space station. They used their proven and in-existence logistics system and have, therefore, had a very significant program with their Salyut system and have a lot more manned experience to date than we have.

I don't think that means that they took the right approach. As a matter of fact, I am convinced that in the long term we selected the right approach. But now we are trying to add that other crown jewel and think that it's time. If the United States

intends to maintain a manned space flight program at all, or the capability to develop manned systems, then we have to decide that there is something to use our present capability for, or else that will dry up and we'd need to re-establish it at some later date. Our development team for the Space Shuttle is the only manned space-flight development team currently in existence in this country. That team is rapidly working itself out of business [as Shuttle development is completed]. We are trying to get people off the Shuttle development program so we can make its overall operation as economical as possible and that means you've either got to fire people or put them to work.

A delay of a year for the initiation of the program and, therefore, a delay of its first flight, wouldn't be all that bad, but a year's hiatus in activity keeps operations costs up or requires us to displace an awful lot of people. So there is benefit in the continuity of the program. . . .

We believe that manned space flight is clearly mandated, not as a foregone conclusion but in trying to understand the nature of this nation's role in the world and the nature of the contribution that space can make to the well-being of man. NASA believes that there is a strong role for the human being in space. It seems to us that the President has said in simple and fundamental terms that he agrees.

EIR: What would it indicate to you if this society actually made the decision that there is no real role for manned space?
Culbertson: The reasons that I don't feel the least bit discouraged and feel that a philosophic debate would not bother us that much is that we see all around us, in the developing and developed world, a rapidly growing interest and involvement in space. And I can't believe that it is all going to be unmanned, in any sense, at all.

We used to think we were competing with the Soviet Union in what we called the space race. Now it is much broader than just the Soviet Union. The Japanese are extremely interested in what we're doing, and not in space alone, but in manned space. They've never had a manned space program in the past but their growth in space activity indicates to me that it won't be long before they are either going to participate in a program with somebody else or they will have their own manned space program.

The Europeans are aggressive competitors with us right now in other areas which we used to consider our own domain in space. Many other countries are becoming involved in communications satellites.

You cannot reverse the direction and the role that space is playing in society. From the standpoint of human beings in space, today everything that the United States is doing is similar to the explorers of the past—we come and we look and then we go back home again, and it will remain that way—without true exploitation until we can stay for a while.

That's what happened when the first colonists first came to this country. There was not a lot of exploitation until people had the audacity to build a log cabin and stay a while.

EIR: On the economic aspect, it has always struck me as a twisted sense of logic to state that because of the economic situation we may not be able to fund certain NASA programs while it is proven, scientifically and historically, that what has led to economic growth and the introduction of new technology and increased productivity has been the federal government investment in NASA and in other research and development capabilities.
Culbertson: I agree with you or I wouldn't be able to live with myself, having been in advanced technology all my life. I am convinced that a high percentage of problems this society faces can be either solved or assisted by the applications of the things that come out of the technological world. We lead the government in general, both in that the work that we carry out is advanced, and in the level of expenditure. There are good arguments for saying that the NASA investment in research is extremely beneficial to this country and has a high return.

We believe that manned space flight is clearly mandated. If man stops asking fundamental questions about his relationship to the universe, then civilizations soon die. The concern I have is the degree to which our economy ignores the problems of ten or twenty years from now. What other program can you name that affects all of our lives and the lives of those yet to come the way the space program does?

EIR: In looking into the history of the "space program" going back to Leonardo da Vinci, Kepler, and John Milton, it has seemed to me that you are dealing with something unique in the space effort, in the sense that a society's view of itself and its future has always been very much reflected in the way it looked at the rest of the Solar System and the universe.
Culbertson: I think that is absolutely right. And I think that is the first or second reason why there ought to be a strong NASA.

To the degree that man has the ability to think, then he must ask himself questions and seek answers to those questions, and NASA is very effective in searching for answers

to some very profound and fundamental question that man has asked himself for longer than he has asked any other questions. The quest for man's relationship to the rest of his universe has to be one of the earliest questions that man has been able to ask, beyond "How do I survive today?"

You can look at civilizations in the past that clearly show that if man stops asking those fundamental questions about his relationship to both the universe, the Earth and the Solar System, then I think civilizations soon die. . . .

I mentioned another direction that I wanted to follow up a little bit more. You were talking about the fact that NASA is not the only agency, but is one of the principal agencies, in advanced technology: and one of the things about working in the frontiers of engineering and scientific knowledge is that the results of that fundamental growth in knowledge, in the designing new systems, does not solve today's problems—they are directed at longer-term, sometimes more fundamental problems.

The concern that I have is the degree to which our economy is focused on the solution of tomorrow's problems and ignores the problems of ten or twenty years from now. It would be tragic if a preoccupation with tomorrow's problems drove out any consideration of basic problems that we will face twenty years from now. We can't predict all of those problems—we can predict some. It seems to me that that is the area the advanced technology really takes on. . . .

The contribution that space can make to understanding more about how food is produced and the degree to which pollution of the waters and the air affect the growth of food and the potential of the world to grow food; the degree to which space can alert us to impending natural disasters; the extent to which knowledge from space can contribute to our understanding of plate tectonics so that we can better understand the possibility of earthquakes; the extent to which observations from space can help us reap and harvest protein of the ocean, start the list of the ways we are using space today to contribute to dealing with the problems of the last few years of this century, and we will continue to build man's knowledge of those fundamental things we were talking about earlier. What other program can you name that affects all of our lives, and our children's lives, and the lives of those who are yet to come in the way that the space program does?

EIR: The most frustrating thing in preparing testimony for Congress, for example, is to try to make clear all these aspects of the space effort. No one understands economics in this country. Spending more money on the NASA program in FY84 does *not* contribute to the nation's economic problems—it helps solve them.

Culbertson: If you want to get down to the straight economic returns to the government, a good case can be built using the best example we've got which is the use of communications satellites.

NASA has looked into what has probably been spent on communications as a direct result of communications satellites—whether in space or ground elements—what it has done to the industry. Our figure is that we have spent about $8 billion total in the industry. The federal investment was very, very small.

There was an article in the *Washington Post* yesterday which said that by the year 2000 there will have been an additional $100 billion spent, by the world, in communications. If you must look at the effect that this industry in this country has had on direct return to the federal government in taxes, it more than pays for the investment the federal government made in space communications, by quite a bit.

This is aside from the employment it has afforded and the effect that it has on several levels—jobs, employment rather than unemployment, and there are a lot of other numbers than a direct return-on-taxes basis.

That is the example that is most dramatic, but if you consider what has already happend in the way of natural disaster warning from weather and what that has meant directly to the national economy and to the federal government in the way of avoidance of disasters and crop production, then I would guess that that piece of the program has paid handsome rewards in a direct dollar-for-dollar relationship. If it were possible to sit down and do all those studies, you would find that the space program has much more than paid for itself, in very direct and real dollars, let alone the advances in technology that have been provided by the fact that the government demanded the advance in technology.

I don't know how important national prestige and the relationship we have with other countries in a political sense, how important that is. I would think it would be of significant importance. If you look back at this country over the last 15 to 20 years and ask a group of one hundred people to name 10 good things that had been going on in this coutnry, I doubt that any one would miss the space program. They want to be proud of the country and it is one of the outstanding accomplishments of the country.

EIR: Oct. 4 is the 25th anniversary of the Space Age, as it would be called here. In the Soviet Union it is the 25th anniversary of the launch of Sputnik. The July 7 *London Times* had an article speculating on what the Soviets may do to celebrate that anniversary. What do you think they might do?

Culbertson: I would prefer not to speculate. The Soviets have not disappointed us in the past. They have normally enjoyed celebrating their anniversary of Sputnik, which also happens to be the 55th anniversary of the [Russian] revolution. I believe that it has been written that the launch of Sputnik was coincident with the 40th anniversary of their revolution. I think it's reasonable to believe that they will plan something to show their position in the world of space.

It is not unreasonable to believe they may have in mind some other kind of spectacular thing in the way of a planetary or even lunar mission of some sort. But I expect something very interesting to be done on the fourth of October.