

Today I would like to talk to you about the most important aspect of quality and productivity "the human element." I think the "human element" is an under-utilized resource we have within the Federal workforce. We (management) are not getting the maximum productivity from our people. I want to tell you today about some of the things we have done and are doing at the NASA Lewis Research Center to create an environment to enhance productivity and quality.

First of all, a little bit of background: the Lewis Research Center was founded in 1941 as an NACA (National Advisory Committee for Aeronautics) aeronautical propulsion research center. From 1941 to 1958, Lewis built all of its major propulsion test facilities and expanded its areas of research to gas turbine engines, basic and applied materials, and hydrogen-fueled rockets. In October 1958 when Lewis became part of NASA, we not only continued on as an aero-propulsion research center, but we also moved into chemical rocket and electric propulsion technology, space power technology, spare communications, medium-class launch vehicles, and terrestrial energy research for the Department of Energy. Lewis is now a diversified Center responsible for both research and for carrying out major developmental projects. We have an annual budget of about \$850 million dollars and employ about 4,000 people (approximately 2,700 civil servants and 1,300 support services contractors).

A year before I accepted the job as Director of the Lewis Research Center (in June 1982), there had been a threat of closing the Center. NASA had gone through a very difficult budget cycle with OMB and was threatened with a large budget reduction. One of the proposed options to the budget threat was to

close the Lewis Research Center. When I arrived at Lewis, the morale was very low, as you can imagine. The Center was unsure of its future, and there was no clear set of goals or objectives. This resulted in a poorly motivated staff and a generally depressed environment. Also, Cleveland, Ohio, is a highly industrialized area and therefore heavily unionized, and likewise, Lewis is also unionized. This includes both the white and blue collar workforce, including secretaries, scientists and engineers, other professionals, and mechanics and technicians.

So, my challenge was to take a Center that was at a low ebb of morale and motivation and create an environment where the workforce would feel that they knew where we were going and were sure of their future. The senior staff (10 people) and I started in June 1982 a process called Strategic Planning. I think that it is important to understand the "culture" of the Lewis Research Center. The Center management had been, for the past 40 years, autocratic. If you wanted to get something done, you would tell subordinates what to do and how to do it. The "culture" is a reflection of the thoughts and ideas of senior management, especially of the Center Director. The management philosophy at Lewis over a long period of time had created an autocratic "culture."

One of my goals was to change the autocratic "culture" around to one of participative/consensus management. This has turned out to be a difficult task because the people (workers and management) had rarely been asked before what they thought. The senior staff had never been asked to participate in setting policy or have a voice in how the Center was run. I think that in any

environment, it would be difficult to establish a participative management environment. First of all, management is worried that they are giving something up; and secondly, the people that are asked to participate think, "Hey, wait a minute, that is not my responsibility, that is yours, you are the boss, you make the decisions."

We have initiated a series of programs to change the way we manage and the way we interact with people. We started a pilot program for quality circles, which the Center never had before. Today, we have 350 people involved in quality circles. We look at quality circles as a form of participative management or as a method to learn participative management techniques. We are having some difficulty because people go to a quality circle where they participate in decision making and then return to their work units where they run into some of the old autocratic "culture." We are trying to transition the participative environment of quality circles into every level of line management at the Center.

We have an excellent relationship with the labor unions on quality circles. I am chairman of the steering committee that is made up of several members of management and the heads of the labor unions. We function as a participative, decision-making group on the quality circles program.

We have also started a series of educational programs on participative/consensus management. We did this because we found that there was (and is) a lot of confusion in people's minds about what is participative management, what decisions do you participate in, and which ones do you not participate

in. Is everything done in a participative manner or is this just another management style that one can use? The educational programs start out with first-line supervision where they spend a week learning about management styles and interacting with our senior staff. I talk with every class about management philosophies, how you interact with people, and the future of Lewis. One of the things we are doing that is very valuable with this first-line supervision program is to have them work on a problem that directly affects the Lewis Research Center. A list of six or seven problems is provided to them to choose from or they can select their own problem. However, the requirement is that the problem has to be real and they have to come up with recommendations on how to solve the problem.

The groups then report back to senior management on the problems that they have studied. One group came back and said that we should have management courses for non-supervisors to teach them participative management, and we instituted a course for non-supervisors at the Center. Another group said, and not surprisingly, "Why don't you educate my boss? After the course, I know what I should do, but he doesn't understand me." At that time, we did not have a program for the next two levels of supervision in the Center (branch and division chiefs). We created our own program on participative and consensus management, working with the people at NASA Headquarters, and with university people. For the last three years, we have continued to modify these courses; and as we learn, they are becoming more and more effective. We are now educating non-supervisors and all levels of supervision. We are teaching the philosophy that people are highly motivated, they want to work, they want to participate, and they want to contribute. If one can really

believe this, participative management is a very natural thing. If, however, management still thinks that people are not really to be trusted and have to be told what to do, then we will never enter into a new environment that can really turn people on.

An ideal way to see the participative management philosophy in action is to observe the first presentation of a quality circle. Some of our mechanics and technicians had never had an opportunity to make a presentation in their entire careers. They had never talked with senior management and were never asked what they thought. The people in the circle were told, "work as a team, define your problem, solve your own problem, then come in and make a recommendation to management." These people were so turned on after they did that. Their work life changed, and their attitudes about their jobs changed drastically when they went through the quality circle process. I always ask the circles, "On your way to solving your selected problem, how many other problems did you solve and implement without even involving management?" Between 20 and 40 problems were solved by every one of the circles on their way to working out their selected problems. One electrician said that he had never really talked to the other people in his own work area. They found out that when they start talking and working together on some common problems, they started resolving many problems that had affected them for a long time.

We are creating an environment where people can really feel that they are part of the institution and that they belong. They are making decisions that affect the future of the Laboratory, and are very proud of what they are doing. They are now far more productive in their day-to-day activities.

We also have several other programs to enhance participative management. I meet with approximately 100 people at a time, every other week in a relaxed, informal environment, at breakfast or after work at our picnic grounds with beer and pretzels. I talk to the group about my management philosophy, where the Lab is going, and what the vision of the future is. After these discussions, they know where the Center is headed and they know where they fit in into the entire process. It takes a lot of time (about a year) and a lot of effort to communicate with that many people, but it has had an impact on the way people view their jobs.

Another thing senior management and I have recently done that has caused a bit of a tremor within NASA is that we decided that there were too many levels of management at the Center. We are organized the way many industries are organized and the way other NASA Centers are organized. We have sections, branches, divisions, directors of, and myself - five levels of management. We thought the span of control should be from 6/1 to 15/1 (subordinates/supervisors). The first time we did this calculation, we came up with the solution to the problem: we were 3,000 people short! I said, "Well, maybe there is another solution to this problem - fewer managers." It took a year and a half working with the senior staff to arrive at the conclusion - that, indeed, we did want to eliminate one level of management. We talked to the division chiefs, and they said things were great. We talked to the branch chiefs, and they said we have exactly the right amount of management. We we talked to the section heads, and 50 percent said that there was too much management. When we talked to the workers, 75 percent said we have too much

management. It all depends on where you are! The senior staff and I reached a decision in a participative management style. After studying and discussing the problem and talking with companies that are flattening their organizations, we came to the conclusion that indeed we had one too many levels of management at the Center. So we set the policy that we would have one less level of management at the center and as a result, increase the span of control.

We then went to the three levels of management below and said, "Okay, here is the policy, now you come up with an organization that meets the increased span of control." Their reply was, "Well, I didn't participate in the decision to have one less level of management." And I said, "That is policy, the people who participated and formulated the policy were the senior staff. It took us a year and a half of discussions to arrive at a consensus that was the right thing to do." Once the policy was established and accepted, we let the next three levels create their own organization. They participated, by creating their own organization. The point is - what type and level of decision do you participate in? Twenty-seven hundred people do not participate in every decision at the Center, because the Center could not function that way. You participate in the things which effect your immediate environment. About two-thirds of our organizations have implemented this policy. In another six months to a year, every organizational element will have one less level of management at the Center. We now have eliminated a level of management, and we believe that communications and participation will be greatly enhanced.

Even after this, we may still have too many levels of management. A year and a half from now, we will take another real hard look to see if we should go from four levels down to three levels of management.

Another thing we are asking our management to do is to take a look at how they manage. We are a research and technology center, and we analyze our technology problems from every point of view. Yet, management is taken for granted. We never stop and analyze our management style asking "what really is my job, why am I really there, what function am I really performing?" We now ask every one of our managers to analyze themselves and analyze the way they manage as they would analyze any technical or scientific problem. We are trying to encourage people to think differently, trying to create a new and different "culture." Changing the culture of a Center is a real challenge because it is new and fertile ground with no text books on "how to." We are trying some things that have not been tried before, and we are trying to learn from others' experiences both inside and out side of the government.

I have come to the conclusion that our relationships with our unions could be greatly improved. Not that I don't want the unions, I think the unions can and have been performing a very valuable service. They can be a valuable asset in helping carry out the policies and functions of the Center. They can provide a communications link as to what the working conditions are really like at the Center. However, that is not totally what the relationship is now. We are finding that the contracts we jointly signed are prohibiting us from interacting with each other the way we would like to. I have a part of

my organization whose function is to interface with the labor unions. At times, I have people doing things that they should not be doing, and the unions have people doing things they should not be doing, and everyones time is being wasted.

We will eventually evolve into a different type of relationship with our unions. I believe that basically what the unions want for the people at the Center is exactly what I want. I want to create the best possible working environment, I want the individual worker to have the maximum latitude , and I want him to participate in management decisions. I want his thoughts and his ideas, not just his arms and legs. There is an untapped talent of thoughts and ideas that is not being utilized. People know how to solve their own problems. They are our "human element."

I think that all of the changes at the Lewis Research Center are very exciting and will be positive. Looking to the future, we ask, "Can we have one great big quality circle of 2,700 people working together at Lewis?"