

SPEECH BY THE VICE PRESIDENT

AT

SANDERS ASSOCIATES, INC., NASHUA, N. H.

OCTOBER 14, 1966

First, I want to join with Senator McIntyre in commending Royden Sanders, Jr., upon his outstanding work as a scientist, as a businessman, as an engineer and - most importantly - as a great citizen. We need people like him who understand the basic purpose of science and technology. That purpose is to serve humanity.

This company - Sanders Associates, Inc. - represents something very significant that is happening in America. Government - federal, state, and local - is in partnership these days with industry and labor. There isn't any room in this country for class conflict. But there's plenty of room for cooperation among all segments of our society. That is why our industrial capability, efficiency, and productivity are advancing with giant strides.

I know that this company has a vital role to play in the defense of this republic. I know that this company, and others like it, has a vital role to play in achieving the better life that everyone on the face of this earth hopes to have. And I know that, because of the cooperation between government and industry today, America is leaping forward at a fantastic rate in the development of industrial productivity.

Recently a leading businessman and scientist from Western Germany told me that the investment American industry is making in research and development is going to put the United States so far ahead of the other industrialized nations of the world that they won't ever be able to catch up with us - unless we are willing to share that technology.

As you know, I am Chairman of the National Aeronautics and Space Council, and I have seen the by-products of this great research and development enterprise. We are working, for example, to develop an artificial heart powered by radio-isotope that will keep going for at least five years - and by subsequent surgery it could be replaced by another. I have seen at the Los Alamos laboratories projects for the development of nuclear-powered space ships that would make it possible for us to carry out in a week or less space flights that would otherwise take months. Already the space effort has produced such by-products as new materials, new alloys, and new sensors. And we're planning to map the earth geologically from the skies.

Great possibilities lie ahead in space exploration. Although I set no timetable, here is what could come to pass:

- * The establishment of a permanent manned base on the moon.
- * The exploration of the moon's surface.
- * The development of recoverable and reusable launching vehicles.
- * The development of a whole family of earth-orbiting stations, manned and supplied by regular ferry services.
- * The building of spaceports for the regular departure and arrival of space craft.
- * The launching of unmanned probes to every part of the solar system - and manned trips to the nearer planets.

There'll be great achievements here on earth as well. According to some highly qualified engineers and scientists, these things are possible in the next 15 or 20 years:

- * In education, the widespread use of teaching machines and other new techniques which will make it possible to individualize education.
- * In worldwide communications, the everyday use of translating machines- and the linking of universities throughout the world in the equivalent of a continuous global seminar.
- * In medicine, the routine transplantation of internal organs from one person to another and the widespread use of artificial organs.
- * In psychiatry, the common use of drugs to control or modify the personality.
- * In industry, the application of automation to some kinds of decision-making at the management level.
- * In engineering, the channeling of water from surplus areas to shortage areas thousands of miles away.

As Chairman of the National Council on Marine Resources and Engineering Development, I have been particularly interested in the economic desalinization of water. Five years ago, the cost of desalinization ranged from \$1.00 to \$1.50 a thousand gallons. In the relatively near future, it will down to 70¢ or 80¢. With

the nuclear plant projected for Southern California, to be in operation by 1973 or thereafter, the cost may be as low as 21¢-22¢ a thousand gallons. And there is already speculation that, in the course of the next few decades, we may be able to get it down to 15¢, 10¢, or even 5¢.

Remember that only 10% of the land surface of the earth - about 2% of its total surface - is arable at present. If we can bring fresh water to the deserts of the earth, we can make them bloom - and much of that desert soil is fabulously rich.

We are planning, also, to learn more about the 71% of the earth's surface that is ocean - like space, an environment about which we have hitherto known very little. It is a rich potential source of food, and particularly of protein - whose deficiency in the diet of many millions of children in the developing children denies them their full physical and mental growth. Not only can we raise the yield of fish by present methods - we may be able actually to "farm" the oceans to increase their output of fish!

We are also going to learn a lot about the weather by more intensive study of the oceans. We're developing a system of electronic buoys that will give us a great deal of information about ocean temperatures, which have a substantial effect on the weather. Maybe it will help us even to achieve some degree of weather control, as well as more accurate and longer-range forecasting.

We are already getting oil and gas by drilling in the shallow waters of the continental shelf. And in the future we may be able to mine minerals from the bottom of the ocean. The ocean itself contains enormous quantities of copper and other metals - we have only to learn to get them out economically.

Yes, it's a great time to be alive. There's never been a time when there was so much promise for tomorrow as there is now. Yet there has never been a time that was more dangerous. We have the means now to destroy ourselves - or to save ourselves. The problem confronting mankind is to learn how to live together.

This great company has as its purpose not the destruction of life but the saving of life. Every weapon this company builds or that this country buys is for but one purpose, the creation of the conditions of peace in this world.

I am delighted to have been here today. I hope that you'll go away from this meeting feeling that there are even better days ahead. I want to thank you on behalf of a grateful country for what you are contributing to our national security and to our common good.

SPEECH BY VICE PRESIDENT HUBERT H. HUMPHREY

AT

SANDERS ASSOCIATES, INC.

October 14, 1966

Thank you -- Thank you Mr. Sanders -- thank you very very much. Governor John King and Senator Tom McIntyre, Mr. Barry -- Bill Barry -- friends, employees, officers, scientists, technicians; good fellow Americans of Sanders Associates.

I have been receiving such a fill-in this morning on this great company -- on this great electronics and scientific laboratory and development organization that I feel as if I'm a charter member. I've reminded Governor King and Senator McIntyre as the Chairman of the Space Council, which is one of my duties as Vice President of the United States, and now Chairman of the Council on Oceanography (the marine resources) that I have indeed more than heard of Sanders Associates. But that wouldn't still them at all. These fellows are filled up with the juice of the Chamber of Commerce. They have been telling me about this and I agree it's the greatest company I've ever seen Governor and I have every reason to agree to it in more ways than one.

First, I do want to join with the Senator, Senator McIntyre, in commending Royden Sanders, Jr. upon his outstanding work as a scientist, as a businessman, as an engineer but more importantly as a great citizen. Because what we need more than anything else in our country today are people who understand the purposes of science and technology. These purposes are to serve humanity. I want to take just a moment of your time -- I know you've been waiting -- we've had a very delightful day in New Hampshire.

I travel a great deal across your country. Only about 10 days ago, Mr. Sanders, I was in LaJoya, California at Scripps Institution -- I'm sure you know of it. It is one of the leading oceanographic research institutions or centers of research in the world. Two weeks ago I was at Los Alamos visiting our large scientific laboratories in the field of atomic energy. Edward's AFB, Cape Kennedy, Guided Space Flight Center in Maryland and in just this past week at Clark University where I dedicated the Goddard Library. I mention these names because I'm talking to people that are involved in the future. I'm talking to a group of employees, to scientists, engineers, to skilled workers, to people in a great enterprise, management of labor that are carving the kind of a world we're going to live in. This is the most fantastic period of change that man has ever known. More change in industry has happened in the past 66 years than in the preceding 5,000. And the last third of the 20th century will see more change than has happened in all of recorded history. A gentleman has just walked up to the platform that some of you may have seen and I asked him, while I was looking back over the rail, I said David -- go get me some of those notes about my work in the field of oceanography and science and space and I want to refer to them because I want to tell you about what we're doing.

This company -- Sanders Associates -- represents something that's happening in America. Your government, and your government, by the way, is not all in Washington. Most of it is at the state and local level. But your government -- federal, state and local, is in a partnership these days with American industry. And American industry is in a partnership with American labor. There isn't any room in this country for class conflict. There's plenty of room, however, for the cooperation amongst every segment of our society. Our industrial capability is the envy of the world -- I think we take it for granted. But this industrial productivity, efficiency, and capability is expanding with giant strides. And a good deal of this is

due to the fact that that at long last we have blended together a great team. The Federal Government and State Government; private industry; these great firms such as Sanders; the University with its scientists; men of management skill -- great financial institutions, because it takes great financing and we've blended it all together.

One place where we see this more than any place else is in a program for which I have responsibility -- the space efforts of your country. I mentioned earlier that I do have, by law, the responsibility to serve as Chairman of the National Space Council. That council coordinates all of the work in space in defense and in the civilian or peaceful aspects of space. The National Aeronautics & Space Administration and the Department of Defense, the Atomic Commission -- all of them are under the jurisdiction of the National Space Council over which I preside. Now you will note that every time Congress gives me an assignment, since my two assignments from the Congress are in space and in the oceans, that it's either out of this world or at the bottom of the sea. I don't know what Tom McIntyre has against me but I thought I'd come out here and find out but I know that this great company is involved in both. I know that this great company has tried and has successfully solved some of the most difficult military questions of science and engineering that this nation has ever known. I know, for example, that Roy Sanders had the responsibility for the successful development of the first guided missile -- the LARK -- isn't that right, Roy? And I know that today this company is involved in oceanography -- in anti-submarine warfare. I know that this company has a vital role to play in the defense of this republic, and I know that this company, and others like it, has a vital role to play in the better life that every person on the face of this earth hopes to have. And I know that because of the cooperation between government and industry today that America is leaping forward in a fantastic development of industrial productivity.

Only two weeks ago, ladies and gentlemen, a leading businessman and scientist was over from the German Government to see me -- the Federal Republic of Germany -- and the German people are very competent as you know. I meet with the scientists from France, Italy and Japan and Germany and Belgium and Holland and Britain -- they're in to see us every week. We have symposiums, seminars and conferences and you know what this man told me -- he said the investment that your country is making today in research and development in American industry is going to put the United States so far ahead of every industrialized nation in the world that we won't ever be able to catch up with you -- unless you're willing to share that technology. And it is a fact.

I could speak to you today of what we call the by-products, the side effects of these great research and development enterprises. I could tell you, as I will, about a battery for example. A radio isotope (atomic isotope battery) that's no bigger than the fingernail on your little finger -- that'll be put in a mechanical heart and that mechanical heart has functioned successfully at Cincinnati, Ohio last week in a surgical operation and that atomic battery will keep the heart in perfect rhythm for five years and by subsequent surgery you can replace the battery again and the heart starts all over again in the human body. I have seen at the Los Alamos laboratories the most carefully, sensitive development projects of nuclear power from nuclear rockets that will make it possible for us to send men into space flight for months -- to go to Mars -- to go to Venus -- either unmanned or manned exploration. You say well what does this mean to us practically. Well, I'll tell you what it means. We're getting new materials -- we're getting new metals, we're getting new sensors. We have discovered the largest gold mine in the United States, not long ago, by a satellite that was 150 miles above the earth and had a radioactive sensor that discovered gold in Nevada. We're going to map the whole surface of the earth geologically from the skies. The old miner that used to go around rubbing around in the dirt hoping that he'd find some precious

metal -- that's for grandpa, great grandpa and great great grandpa -- that's all over. There's a whole new day.

I had some notes here and I just wanted to tell you what we seek. By 1970, I'm not going to keep you long, but let's take a look at the future. When I was a kid we used to read that Buck Rogers stuff. Darned if he wasn't right and all the time I thought he was joking. If I'd had any sense I'd have bought some stock in Sanders Associates. I didn't know that this fellow had some connection with Buck Rogers. I thought Buck Rogers was a fiction writer -- instead of that here he was a prognosticator of the market. Oh man! Well, it would have been a conflict of interests anyway -- it would have just broken my heart -- I would have had to give it all up. It's nicer to be just reasonably poor when you come into office -- you don't have to sell out so much, you know, when you come in. Well I see, for example, by 1970 (in the 1970's) -- that isn't far, that's four years (3-1/2 years from now), of course, we'll have a man on the moon before that -- some people have suggested that I should be the one. And I have politely rejected that kind offer because I have a rather long list of self-appointed applicants of my own. Well, we'll have explored at least the moon's surface and I do predict that the moon will become an international base ----- an International Base for the further exploration of science. In fact, the folks that we're going to be talking to about the exploration of Venus and Jupiter and Mars will be abased on the moon, so girls if you marry any of those fellows, expect you're going to have to make a few trips to see 'em. We'll explore the moon's surface, we'll have the development of recoverable and reusable launching vehicles and I wouldn't be a bit surprised but what this company will help do it. No use of just sending up those space capsules and have them come charging down and not being able to use them again -- they're expensive. I was out to the McDonnell Aircraft Corporation not long ago and saw Gemini twelve. I've been out on the west coast and witnessed the development of the new Apollo -- I've

talked to the people at Lockheed, I saw the supersonic transport out at Lockheed and up at Boeing and I want you to know I gave them both equal time -- thank goodness I don't have to make that decision! We're going to see the development of a whole family of earth orbiting stations -- manned and supplied by regular ferry services. The building of space ports in a number of places for the departure and the arrival of space crafts -- in the next ten years -- I'm not talking way down the road. The improvement of propulsion methods -- the use of nuclear as well as chemical energy for propellants so that powerful rockets can make planetary trips in a week or less which now require many months. And the launching of armed-manned probes to every part of the solar system. We're going to learn more about the sun -- the source of energy and life itself. And we'll perhaps have manned planetary expeditions as well. Now that's some of the far out stuff they say but it's just around the corner. As a matter of fact, in the next 15 years we're going to see, in education, the widest use of teaching machines and other new techniques which will individualize education. We'll have communication satellites -- a whole series of them -- that will connect every University in the world in one constant communication seminar ----- fifteen years. We'll have much of it done in five. You'll have lectures in your own Universities, your own Institutes of Technology in the United States coming with instantaneous translation, in less than fifteen years, from all over the world. A fellow will be over there in Tokyo speaking Japanese and they'll have it translated for those Swedes out in Minnesota (my friends) right there on the campus and that's some trick. And the only thing that's more tricky is to put it into Finnish.

In medicine we're going to have the routine transplantation (the transplanting) of internal organs from one person to another in the general use of artificial ones which are being developed right now. In psychiatry -- that'll be helpful -- they tell me we'll have the common use of drugs to control or modify personality. Won't that be interesting?

With some of the cantankerous souls that you know, we can make them into jolly respectable people with just these drugs. In industry, we'll have the application of automation -- to some kinds of decision-making at the management level and Mr. Sanders could tell you that that's happening right now -- the computer. Do you realize what's happened to the computer? -----17 years, that is the life of the computer now; 17 years ago the first one. It's already in the Smithsonian Institution--number one--as a museum piece. Five years ago, less than five years ago, John Glenn in the first space capsule ----we've got it hanging up in the Smithsonian Institution. You'd be surprised how you can turn into a museum piece in a short period of time around this country. It just shows the rapidity of change.

In engineering, we'll have the channeling of water from the surplus areas of the world over thousands of miles to regions that are parched -- where the water supply is inadequate, and we'll have desalinization of water so economical that the desert shall be bloom in less than a generation. I was at LaJoya, as I told you, and I drank water right from the ocean, in a desalinization process. As a matter of fact, the water was so pure we had to contaminate it so I could drink it. 'Tis true ---- I said you're kidding and the scientist said "no" he said, "we humans have become so used to drinking dirty water you gotta make it a little dirty or you'll get sick." So we had to put a little contamination in the water and I drank it and it was really good -- I think water's here to stay -- I really believe it! But now what do you think we're doing with desalinization? Five years ago, my fellow Americans, it cost 75¢ to a dollar to desalt 1,000 gallons of water. You know what it cost now? -- twenty cents. And with our big plutonium nuclear energy reactor plants we'll get it down to fifteen, ten and five cents for a 1,000 gallons. And the deserts shall bloom. Remember 2% (less than 2%) of the earth's surface is airable. Two per cent of the earth's surface supply all the food for God's children under present conditions. If we can bring

fresh water to the earth we can make the deserts bloom and they will bloom because those desert soils are filled with vitality -- filled with energy so to speak. They will literally produce fabulous crops and we're going to do it. What this will do for the peace of the world will be unbelievable -- just unbelievable.

Well, those are some of things that I see. I have many others that I want to tell you about but I want to say a word about this oceanography then I'll quit because you're involved in it. I like these jobs that I have. I have a lot of people going around worrying about the Vice President. You know they say I'll bet he's unhappy. I am the happiest unhappy Vice President you've ever had ----- I want you to know that! Then I have others that say the President doesn't use his talents. Well, at least that presumes I have some and that's very encouraging. But I do find that my work is one of the most engaging and exciting experiences that a man could ever have. First of all, just to preside over the Senate is quite an exciting experience -- isn't it Tom? One hundred ----- one hundred leaders; I will let you know they don't give the Vice President much authority. But let's talk about this oceanography for a minute. I told President Johnson the other day -- I said, now Mr. President I know that your responsibilities are beyond almost human calculation. No more powerful or majestic office on the face of the earth than the President of the United States -- the President's Office. But, I said Mr. President, your control is primarily over the land areas and what we call just the territorial waters. I said, do you realize that as Chairman of the Council on Oceanography that 71% of the earth's surface is water? And I said, Mr. President, do you know what you have facing you? You have to work with people; all I have are fish. They cause much less trouble. But now having mentioned fish, let me say this -- that the ocean is like space, it's another environment and we're going to learn about that environment. We know very little bit about it. And in that ocean are to be found food -- foodstuffs, fish, animal life, fish life and

vegetable life. The greatest food deficiency in the world is protein. The protein deficiency challenges science today because the deficiency of protein warps the mind and limits the intellectual capacity of the human being and also denies the body full growth. And most of God's children today are the victims of protein deficiency and we're struggling to find protein -- there is no way in the foreseeable future my fellow Americans -- in the next decade -- that we can produce enough food on this earth to meet all the food needs of the children of the earth for the next ten years! No matter what we do to apply modern technology, so we are going to have to do something else and you know what we are going to do? It's all here -- we're going to literally farm the seas, farm the oceans and putting as a high priority, at your government and internationally because other nations are likewise concerned, the matter of developing fish products. Protein from fish and from sea life that is palatable, that is wholesome, that is safe and that is usable and storageable so that we can meet the protein needs of the people of the earth. That is just one of the little things we are going to do. We are going to learn a lot about weather. I wonder how many of you realize that the great typhoon that hit Japan some years back could have been forecast if we had known as much as we know now because the temperature of the water had gone up some seven degrees. And when we start to measure water temperature -- in the earth; on the surface of the seas; in the depth of the seas -- we'll find a great deal out about weather control. Because the weather in the skies is much controlled by the water in the seas. And we're now developing a whole system -- we would hope to do it internationally -- of buoys that will be able to give electronic information and I can see Sanders Incorporated building some of that equipment. I've already seen what we call the mockup, the models, the prototypes -- gee, I shouldn't tell you so much of what we are going to do -- lettin' you in on everything. We are going to mine the minerals from the bottom of the floor of the ocean -- we are already. Do you know that the ocean is filled with copper? That it has most of the precious minerals? And

we're going to find out how to take them out of the ocean. We've already learned how to build whole underground cities through nuclear test band -- underground nuclear testing -- we've learned more about mining out of the necessity to conduct nuclear tests underground -- we've learned more in the last decade than the preceding ten thousand years. We're already taking oils and gases and fuels out of the sea in the continental shelf -- in the territorial waters -- and every one of these things that I speak here you're going to be involved in. Gee whiz it's a great time to be alive-----it's marvelous-----never been anything like it! We just celebrated Christopher Columbus Day here; day before yesterday. Christopher Columbus was an explorer but he really didn't find very much compared to what we're going to find. He just found a piece of the earth. We're finding out about all of the universe. We're finding out about the cosmos and we're finding out a lot about people because while all of the things that I've spoken to you about are almost wonderous, as St. Augustine said, "the greatest wonder of all is man himself". And we're learning out a lot about each other and believe me I want to tell you there's nothing more complex than people but there's nothing more interesting and enjoyable I can tell you or I wouldn't be in public life.

I want to compliment this firm-----I want to compliment this great company and I want you good fellow Americans to know one thing -- that with all of our troubles, and we have plenty, that you wouldn't trade your troubles and this nation's troubles for anybody else's in the world. Whatever our difficulties are they're minor compared to others. There's never been a time when there was as much promise for tomorrow as there is now and yet I can say with equal candor there's never been a time that was more dangerous. We have the tools now to either destroy ourselves or save ourselves. We have created instruments of destruction, machines of war that are so fantastic that we can blow this world apart. Somebody asked me the other day, do you think we have enough munitions. I said I don't know what do you mean by "enough" -- I know we have enough atom weapons that if we miss anybody the first

time we can do it two or three times more and I don't mean just some places -- every place!

The problem confronting mankind is how to live together. We've learned how to die together and now we have to simply face up to the fact that we have to live together. And this great institution -- this great laboratory -- this great company of which you are a basic fundamental, integral part has as its purpose not the destruction of life but the saving of life and every single weapon that this company builds or that this country buys is for but one purpose -- hopefully to create conditions of peace in this world so that mankind can liberate himself from his prejudices, his fears and his inadequacies.

I'm delighted that it's been my privilege today to just face you and look at you. I hope that you'll go away from this meeting feeling that there is a better day ahead even though today is about as good as any of you could hope to have and I, for one, want to thank you on behalf of a grateful country and a grateful President and grateful Congress for what you're contributing to our national security and to our common good. I remind you that everything you build, everything you do effects the life of somebody else. If you make a mistake it may take the life of somebody else. Every tool; every bit of precision work that you do; every electronic device that you make if for a purpose of helping somebody else and if you louse it up; if you do a poor job; if you decide that maybe it doesn't have to be too good; if you think it could be mediocre or just half good all you've done is somehow or another contributed to somebody else's disaster. I wish I could really leave that with you because I know that some of the machines and some of the things that you build go into our aircraft; into submarines; go into our weapons systems; go into our great electronics systems and I've seen the men that use them and don't you ever let it be on your conscience that you slipped or that you didn't do it just right. Remember that what you do is related to somebody else's life

besides your own and if you do, you'll enjoy your work and not only that, you'll feel that you've made a real contribution to this, the greatest land on the face of the earth. Thank you very much.



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