

RULISON—NUCLEAR STIMULATION

C. W. LEISK, Chairman and President
Austral Oil Company Incorporated
Houston, Texas

Mr. President, ladies and gentlemen it is a privilege to have the honor of addressing you this afternoon.

It is always a pleasure to be in this great state and this most fascinating of all American cities. This is the only convention city in the country where they give you a chance to make expenses.

We recently detonated a nuclear device underground with the aid and cooperation of the Atomic Energy Commission as part of its Plowshare Program and I am happy to say that, as in all of more than 200 such shots to date, this one has been conducted without evidence of any hazard or possible harm to any living being.

Dr. Edward Teller has called Project Rulison the first thoroughly practical use of nuclear energy for peace. This sets this apart from all other underground nuclear detonations, but it does not mean that we could have accomplished such a use of nuclear energy without Project Gasbuggy and all of the preceding underground nuclear tests.

Our purpose, as was that of El Paso Natural Gas at Gasbuggy, was to attempt to stimulate the almost impermeable rocks of the Mesaverde formation containing vast stores of natural gas and totally resistant to now known conventional well stimulation techniques.

I believe it is unnecessary for me to explain how rapidly the demand for natural gas is mounting, and how desperately the gas industry and the government are facing the problem of meeting both present and future requirements for this perfect fuel. Gas is recognized as the cheapest, safest, cleanest, and most convenient energy in the history of human endeavor.

Despite the barriers thrown in the path of explorers by puzzling and emotional changes and interpretations of the law and incomprehensible decisions of the federal judiciary, including the Supreme Court, the search for gas in this country has never been greater. Nothing could inspire such a herculean effort to find new gas, except the knowledge that we are running out of supply.

This is not a sales pitch for a gas producer. But I would like to pass on these recent quotes:

"Evidence is mounting that the supply of natural gas is diminishing to critical levels in relation to demand. On the basis of current trends, only a few years remain before demand will outrun supply."—Staff report, Federal Power Commission, October 2, 1969.

And another:

"The latest estimates on total U.S. gas demand exceeded supply in 1968 and will continue to do so by an ever increasing margin up to the year 2000."—Henry R. Linden, Institute of Gas Technology.

And this one:

". . . a major gas shortage is approaching unless there is a basic change in our underlying resource

situation."—John F. O'Leary, director, U. S. Bureau of Mines.

These are facts, which most of us have known for at least a decade, and have preached from the rooftops. But it is satisfying to see warnings now being echoed by many who heretofore questioned our appeals.

It was with the realization of the existence of an impending shortage of natural gas that the Bureau of Mines boldly stated in a 1966 report: "If the technique of underground nuclear stimulation of gas rock reservoirs proves economically feasible, this method could develop an additional 317 trillion standard cubic feet of gas and more than double this nation's proved gas reserves."

These locked-in reserves are situated in thick sandstones of the Piceance, Uinta, Green River, Wind River, and San Juan Basins, all in the great Rocky Mountain region, which, it has been said, is the potential center of one of the most remarkable areas of industrial progress and prosperity of any region in the world.

In this awe-inspiring and most colorful region of our nation, all of these 317 trillion cubic feet of natural gas are found in tight sandstone reservoirs and if nuclear stimulation works, this gas can be produced.

If sustained high rates of flow of natural gas are obtained through nuclear stimulation, then, at a price of 20 cents per MCF, this 300+ trillion cubic feet of gas could be worth \$60 billion dollars.

This is ten times the product value that oil explorers envision on the North Slope of Alaska and this product is here in the center of the United States.

Dr. Edward Teller has brought out the point that natural gas can be our greatest asset in solving the problem of pollution, thereby eliminating some of the greatest hazards to national health.

Today at Rulison we are on schedule. There have been no miscalculations that the Atomic Energy Commission or Austral can detect.

As of November 24, last Monday, a shut-in pressure of 2480 pounds per square inch was observed at the Rulison test well. This is precisely as expected. Shut-in pressure is not expected to exceed 2600 psi by the re-entry date in March.

So far, we are encouraged by the smooth predictable operation, and feel certain the stimulation effects of the detonation will be as predicted. We have no question in our minds about the success of Rulison, because there have been no indicators that would give us pause.

There is no question in our minds, or on the part of any of the other participants, that if sustained high rates of gas flow are obtained, scientists and technicians, and the incredible know-how of both that placed a man on the moon this year, will enable us to produce gas from nuclear stimulated wells, safe in its usage and marketable to industry and the ultimate consumer.

When we undertook this task, we had technological and scientific problems facing us, but we were totally confident we could master these. Today we are even more confident, since every predicted technological problem to date has been met with almost uncanny success and precision.

But I must admit that unforeseen problems have arisen which seem to be more serious, more vexing, and often more frustrating than problems of technology and science.

First, there are the legal problems, in which we are being forced into landmark decisions. So far, we have been successful, even to the Supreme Court. Still, we do not know what tomorrow holds in the court room.

Second, there is the emotional and public acceptance problem, which is understandable. In war, the atom bomb was a terrible weapon. Its devastation was beyond imagination. But that was in wartime. Since then, thousands of advanced scientists and technologists of the world, and especially in this country, have devoted their talents and skills, and billions of dollars, to the harnessing of this great power and to turning it toward peaceful uses that can serve mankind in a manner most of us still cannot comprehend. Concerned conservationists and other citizens are still not convinced that

nuclear energy can be safely harnessed for peaceful use. I believe that closer and better communication is necessary to overcome this concern.

Solutions to these problems do not lie in the direction of confusion or polemics. Solutions lie in reason and in an appeal to the common sense and understanding of intelligent men.

It should be understood by everyone concerned that nuclear scientists and technologists, who are actually in charge of every step in Plowshare, would take no gamble that would endanger the health or life of a single American. Rulison might not produce gas, but it certainly will not produce a public hazard.

And I can assure you that no one is demanding more in the way of safety to man, animals, and vegetation than my company. We find these facts are difficult to communicate, but we are confident that those who will gain the most—the American people—and especially those of the Rocky Mountain Region—will understand in time.

We have a film portraying what has been accomplished to date at Project Rulison which my company had undertaken with the aid and cooperation of the Atomic Energy Commission as part of its Plowshare Program.