

I think the committee should know that we are already taking one initial step in this area, using atomic energy for peaceful uses with regard to oil and gas development. Three weeks ago Dr. Seaborg and I signed a contract with the El Paso Natural Gas Co. In northern New Mexico, near the Colorado border, we are going to carry out next fiscal year this Operation Gasbuggy project. I want to describe it to the committee very briefly because I think it is important.

This is an area in what is called a tight gas formation. Because of the nature of the rock formation, the amount of gas that is recovered is limited to about 10 percent.

The calculation is that by making an underground nuclear explosion, which I need not describe, and I am not an expert on anyway, that you will enhance the recovery to 70 to 80 percent. If this proves to be useful in certain types of formation, we may make a fantastic increase of our natural gas reserves by using atomic energy as a recovery device.

This is a thing that everyone has talked about, dreamed about, and so on.

Now, in terms of oil shale, if Operation Gasbuggy works, then the next big step is what is being called Project Bronco. This would be an attempt at some carefully chosen place, probably at the edge of the oil shale deposits, to determine whether, by using an atomic device, you can fracture the oil shale to permit the *in situ* process to work. So it will not surprise us at all if—we are not speaking positively on this—but it will not surprise us at all if the linkage of atomic energy and oil shale development proves to be one of the keys to rapid development.

The CHAIRMAN. I do not think there is any question, but based on the views of some of our experts in this field, there should be a tremendous opportunity to further advance this program. The many, many tests that we are conducting underground for weapons development, of course, have enormous peaceful applications and will be extremely useful in connection with this program.

It will be necessary for me to leave the hearing at this time. We have a meeting of the CIA watchdog committee. There are a few problems there, also.

I will ask Senator Moss to take over and chair the meeting for the balance of the morning.

Senator Moss (presiding). I want to ask one question, Mr. Secretary, about this process of blocking up. There are, of course, a good many school sections out in this area of oil shale deposits, such as in Ford Township in my State. School sections are not encumbered by mineral entry as a general rule.

Is it going to be possible to block up through use of school sections and get into this area sooner, so that we might have some oil shale development, rather than go through the long involved process you spoke about of getting titles cleared on a lot of this land?

Mr. UDALL. Well, certainly. It so happens that the Senator, in his own State, has been through exchanges involving other minerals and we have successfully done this. I believe I am correct—and my Solicitor will stop me if I am not—the normal laws concerning State land selections and the new selection process as well can apply as far as