

I hasten to add, however, that if that were a concern, a man could be given a provisional lease of 5,000 acres on the assumption that the geology was such and such. If he happened to get a windfall and found out the geology was 50 percent one way or the other, perhaps then he would get a further opportunity to adjust his acreage holdings. I consider that to be a mechanic and not of any great concern.

I think the key point is, 200 acres with 2,000 of thickness equals about a billion barrels of oil, whereas 5,000 acres with 60 feet of thickness equals about a billion barrels of oil.

Senator ALLOTT. Mr. Chairman.

The CHAIRMAN. Yes, Senator Allott.

Senator ALLOTT. I think, in view of the fact that many people who might read this record might be somewhat confused by this, it should be made perfectly clear that there is no such thing as uniformity throughout this entire area, either as to thickness of the shale formation or as to the kerogen content of the shale. Would that not be true, Mr. Hartley?

Mr. HARTLEY. Well, Senator, within a given area, in fact, the only thing that really makes the entire shale oil mining and retorting system viable is the fact that Mother Nature has been pretty uniform.

If it were not so, I think the entire subject would be only of academic interest. We today in our mine and other mines that I have inspected, including the Bureau's, are impressed with the tremendous uniformity of the oil shale deposit. We are somewhat appalled at the lack of uniformity of the roof structure and the hazards involved in mining potentiality of roof falls, and so on, which perhaps corresponds to the failure of oil wells after being in production for some time, due to sand falling back in, and so forth and so on.

I do not mean to say there is not the hazard within the oil shale operation, but Mother Nature has done a pretty good job of being uniform within a given area.

Senator ALLOTT. Let me make my point very clear here because there will be a great many people who will read this record who have never seen any kind of a mining formation. But you have formations running all the way from 25 feet in thickness up to possibly as high as 2,000, that you have proven out, I think, and find the facts to be that very little runs 2,000 feet in thickness.

It has been estimated that some of it runs as high as 70 gallons per ton. But how much can be proven out at 70 gallons per ton is at the moment more or less a speculation also; is it not, as of this moment? Or do you feel you know? I have been told that all of the private drilling there together cannot definitely define these areas.

Mr. HARTLEY. I think that the various parts of the basin have to some degree been explored, some more than others, and I am not trying to say that the entire area is uniform.

What I am trying to say is that if there is a 60-foot seam in a given area of 5,000 acres, that that particular seam is relatively uniform.

Senator ALLOTT. Right.

Mr. HARTLEY. And that there could be a 2,000-foot seam area within, let us say, some limited geography, I do not know exactly how many acres, it could be only 200 or it might be 5,000 that, too, would probably be quite uniform. Are we together now?