

and other factors of a specific project would be undertaken by the Department of the Interior, the AEC, and AEC contractors, including the Lawrence Radiation Laboratory at Livermore which is operated by the University of California.

I would like to thank you for this opportunity to appear to discuss the AEC's Plowshare program as it relates to the oil shale industry. I will be happy to try to answer any questions you may have.

Senator Moss. Thank you, Mr. Kelly, for your very fine paper and illustrations attached to the mimeographed copy which gives an explanation.

Secretary Udall said that in his opinion the question of using nuclear explosives for retorting oil shale *in situ* was in the early planning stages. Is that about the way you would describe it?

Mr. KELLY. Yes, sir; I think that is a very apt description of the status.

Senator Moss. I understand from your statement there has not actually been any underground test made at all in oil shale rock.

Mr. KELLY. That is correct. We have fired in six other types of rock but not in oil shale.

Senator Moss. The only real experience you have is to extrapolate from one type of rock over into the type that contains the kerogen; is that correct?

Mr. KELLY. That is correct.

Senator Moss. Is the rock generally quite dense in which kerogen occurs or does this vary?

Mr. KELLY. Yes. I believe that would be categorized as a dense rock compared to some of the ones that we have conducted tests in.

Senator Moss. The Senator from Colorado was commenting that the rock in which Gasbuggy project is being worked is very tight, a very dense type of rock. Is this more dense than the kind that we find in the oil shale area?

Mr. KELLY. I would guess that they were comparable but I would have to look this up and give you a more precise answer.

(The information requested appears on p. 71.)

Senator Moss. Has there been any determination yet made as to where the location would be for the first actual test of an underground explosion in oil shale?

Mr. KELLY. No site has been selected. This is something that has been discussed and some criteria have been developed for what would be an appropriate site but no particular point has been selected.

Senator Moss. Has there been enough advance discussion or planning from which you can give us any rough kind of timetable when you would expect that you could carry out the first experiment?

Mr. KELLY. Well, I think that Secretary Udall's estimate of 2 to 3 years is probably pretty good. It depends a little bit on how the results of the Gasbuggy experiment turn out which we hope to conduct next summer or early fall.

It depends also on how fast the industry wants to go, and a host of problems like this that we can't accurately anticipate.

Senator Moss. But this is under active work by the AEC now. You are actively working on this, developing the plans for this test—

Mr. KELLY. Yes, sir.