

years. Then came the great upheaval and the Rocky Mountains were born. Since all this disturbance came after the phosphate was deposited, the phosphate also was disturbed, resulting in tremendous faulting, folding, and erosion. Therefore, our mining problems are truly unique as illustrated in exhibit A submitted herewith.

To further illustrate I have drawn a typical cross section of the geology of the phosphate as it now occurs at the Gay Mine located 32 miles northeast of Pocatello, Idaho, a copy of which is submitted herewith as exhibit B. Western phosphate, because it is covered with more overburden than any other in the Western Hemisphere, is much more difficult and costly to drill. Furthermore, our overburden consists of hard rocks. Normally, around the world the overburden is a soft silica sand. Additionally, our topography is mountainous rather than flat. Some people think that we have mountains of phosphate and we just start digging. This is far from the truth. Finding the economic ore body is difficult and costly.

This leads me to discuss our methods of exploration—finding the economic ore body. First, we walk or “jeep” the area. We hunt for marker beds—the rex chert above or the limestone below. We then prepare geologic maps putting all the geologic factors on paper.

Then we drill for information to add to that map. This means we drill holes miles apart pulling cores from beneath the surface. These core samples let the skilled geologist slowly build a geologic picture which then pinpoints the target area.

I would like to call your attention to the enlarged drawing on your left and I will explain this in a little detail. To give you some idea of the scale let's assume that this is perhaps 2 miles by 3 miles. In the Idaho phosphate the well's limestone is phosphatic. This is a phosphate bed.

In exhibit A, which you have, we saw originally that we had a flat deposit. Then came the Rocky Mountains and as a result we have all of this faulting and in many cases erosional channels which have taken away the phosphate and redeposited what we called the Salt Lake formation.

You have heard much discussion about Senate bill 3132 and the requirement for advance planning in exploration and mining. This is the reason that I have drawn this for you.

The phosphoria is generally soft and does not outcrop. It is covered by debris from the hills above. Therefore, we hunt for this bed below or this bed above which we call marker beds.

After finding these and suspecting the occurrence of phosphate we then apply for a lease from the Federal Government. We do not really know whether phosphate exists until we have trenched and drilled. In our drilling let's assume that we drill the hole here where the thickness of the chert is excessive.

This means that this is not economic. We would pull over this way trying to find the ore or if it were below the ore and drill into the well's formation, we then move up. If you will erase this cross section here from your mind for a moment I would like to point out that we will not find this same sort of structure back a quarter of mile or a half mile or a mile. It will be completely different.

Senator CHURCH. May I just ask at that point, it follows that, since the ore lays in different patterns, you cannot know where you are going to mine until you have drilled exploratory holes?