

likely to be increased, even with an increase of flow of capital or, in fact, that we can avoid the deterioration in the finding rate.

In summary, it is apparent that if we rely, as we now do, upon conventional domestic sources to satisfy about 80 percent of our liquid petroleum demand through 1980, we will by that time be deficient in liquid petroleum by any standard we have until now used to test petroleum supplies.

Approximately 20 percent of our demand depends upon net increase, and if we have that reliance it will be plainly in addition to any production or projected domestic rate that has been made, but in our view it affects only, if you will, the degree of emergency and not the question of whether it is timely that we, as a nation and an industry, must supplement our sources for liquid petroleum supplies domestically.

This is also, I think, the conclusion of Dr. Jones, whose dates must be slightly different than ours, when he said there is not enough time required for substantial production and the difference of 2 or 3 years in a projection of urgent need is not very realistic.

And we do not think that the obvious alternative way of supplying that need from foreign sources by the end of the next decade is very plausible. It is unlikely, as Dr. Jones said, that increased exploration from conventional sources and supplies, the diversion of petroleum demands, and the use of other sources, as Mr. Winger said would be of help, will supply the bulk of the petroleum demand as created by what he called the transportation industry, simply automobiles. And there is not, in the near-term future, any way of approaching that question of petroleum supply for the existing vehicles and supplying the demand in that field within the time that we are talking about, which is still roughly, 1980. This leaves one possibility and one only, and that is a very materially increased reliance upon foreign sources of supply which is, certainly, feasible, but as the committee has remarked, and other witnesses have, the sad events in the Middle East in recent months have made more dramatically evident than has, perhaps, been true for some time, the difficulty of relying upon foreign supplies, not only as to their potential costs but ultimately, at some time, as to their actual availability.

We do not think, however, against this background of immediate and projected needs that shale oil is going to be the entire answer. In fact, we do not think that it is going to be more than a significant part of the total answer. The reason is that, in our view, the conceivable maximum rate of production from the very large reserves of the tri-State area would be impossible to achieve within the 10-year period that we are talking about. It is also evident that the tri-State area contains some alleged 2 trillion barrels of oil.

We think that statement may well be correct, but for planning purposes, petroleum supply purposes, it is, unhappily, irrelevant. The reserves are principally, today, mainly in western Colorado and to a small extent in eastern Utah. The Oil Shale Corp. has estimated, and this committee has heard other and different estimates, that there are approximately 480 billion barrels of oil of economic or attractive grades in the Colorado reserve alone.

I would like to stop there for 1 second to say that the reserves in a place obviously do not mean that you can attempt to analyze how much