

Lifton on Biden and the security of supply of rare earths

written by Jack Lifton | January 24, 2021

The Washington bureaucracy has injected politics into the issue of obtaining a secure supply of critical materials. The first shots were fired immediately after the inauguration of the new American president. To ensure that the monetary awards would not be seen to be supporting the policies of former President Trump, the permanent civil servants in the Pentagon and the Department of Energy announced within 24 hours of the new president's inauguration that \$30 million of Defense Department money would be granted to Australia's Lynas Rare Earths. The company also agreed to match those funds to construct a 5,000 ton per annum light rare earth separation plant at a site in Hondo, Texas, operated by its American partner, Blue Line Chemical.

It should be noted that a separate grant of \$500,000 had already been awarded to the Lynas/Blue Line joint venture to design a heavy rare earth separation facility with a further grant of \$500,000 awarded to MP Materials also to design a heavy rare earth separation plant.

These second grants were part of a U.S. Army (Department of Defense) initiative called "The Cornerstone Project." Cornerstone awards were Phase I, which in bureaucracy speak, means that the big money will be in Phase 2 and that only one of the recipients of the Phase I money will get Phase II money supposedly to build a heavy rare earth separation facility.

There is little cooperation between the Departments of Defense and Energy with regard to the security of supply of rare earths.

At the same time as the awards by the Department of Defense were made the Department of Energy also announced an award of \$22 million to Rare Element Resources (RER) to be matched by the same amount from RER's largest shareholder, General Atomics (GA), a prime military contractor. The purpose of this award was to determine if there are alternative downstream (of mining) processing regimes as compared to the traditional ones, so that a globally competitive American rare earth industry can be achieved.

In the case of RER it may be that a full scale solvent extraction plant will ultimately be constructed using the R&D work done by RER, before GA bought into it. A pilot plant was built in Germany by a GA subsidiary to prove out the efficacy of the solvent extraction system using RER ore (bastnaesite) from its Bear Lodge deposit in Wyoming. The development of a mine at Bear Lodge, however, is estimated to require at least \$350 million more.

Lynas faces the hurdle of mining the monazite feedstock for the Texas plant in Australia and then, also in Australia, removing the uranium and thorium from the ore before a concentrate is shipped from Australia to Texas. The ore would be mined at Lynas' Mt Weld property, which now supplies an ore processing plant in Malaysia – Lynas has agreed to restrict to radioactinide-free feedstocks by 2023. A significant cost will be incurred by Lynas in duplicating the ore processing plant now in Malaysia, estimated at some \$500 million, according to the company. In addition, the freight cost from Australia to the USA (a Texas Gulf Port) will be significant. The Lynas ore processing/solvent extraction plant in Australia cost more than (U.S.) \$800 million with capacity of 22,000 tpa of TREO. To construct a 5,000 tpa plant in Texas for \$60 million will be a challenge to Lynas, especially as it has also proposed to the U.S. DoD that it will build additionally a heavy rare earth

separation facility at the same location.

The commercial production of actinide free mixed rare earth carbonates will begin at the White Mesa Mill operations of Utah's Energy Fuels in March. It is expected that 200 tons per month of the concentrate will be offered into the market beginning in Q2 of this year. I hope that the Defense Department might consider buying this material, since comparable material is not expected to be available from either MP Materials or Lynas for several years! White Mesa will be processing monazite derived from the heavy mineral sands operations in Georgia of American owned and operated Chemours, which processes the mineral sands to extract zircon and the titanium mineral, ilmenite.