Submission No 23

INQUIRY INTO URANIUM MINING AND NUCLEAR FACILITIES (PROHIBITIONS) REPEAL BILL 2019

Organisation: Flibe Energy, Inc.

Date Received: 16 September 2019

20 August 2019

Hon. Taylor Martin, Chair
NSW Legislative Council's Standing Committee on State Development
Parliament House, Macquarie Street
Sydney NSW 2000

Dear Hon. Angus Taylor,

INQUIRY INTO THE URANIUM MINING AND NUCLEAR FACILITIES (PROHIBITIONS) REPEAL BILL 2019

Flibe Energy, Inc. (FEI) is pleased to contribute to the committee's inquiry into factors affecting the future of nuclear energy in Australia, and appreciate your consideration of the following points:

Introduction

FEI is focused on development and design of an advanced nuclear reactor known as the Liquid Fluoride Thorium Reactor (LFTR, pronounced "lifter"). LFTR was based on the original design work performed on molten salt reactors (MSRs) at Oak Ridge National Laboratory in the 1950s-1970s, which included the construction and operation of a several MSRs. While all reactor designs are different, the LFTR takes the best ideas from Oak Ridge and inherently and naturally satisfies many of the concerns surrounding other reactor designs.

Waste

All energy technologies produce waste. But a LFTR produces less waste than any other technology. First, it produces no carbon dioxide emissions. Second, it produces less radioactive waste by increasing fuel utilization from 0.5% to 99%. Third, the radiotoxicity of the waste is short-lived, and returns to the levels of natural ore in about 300 years instead of >100,000 years.

Weapons

A LFTR is fueled by thorium. In the reactor, the thorium is converted into fissile uranium-233. In the conversion process, the uranium gets contaminated with uranium-232. Uranium-232 has been the main reason that for 80 years, no country has built a nuclear program around thorium/uranium-233, with no lack of effort due to the plentiful and accessible supply of thorium. Adoption of LFTR would reduce the risk of proliferation of weapons-grade material.

Safety

A LFTR is a liquid-fueled, and so meltdown scenario where solid fuel assemblies are damaged and then leak radioactive materials is impossible. Furthermore, the molten salt is a fluoride, which is extremely stable and retains almost all radioactive materials. Even in the event of a terrorist attack, an

explosion would simply disperse the radioactive liquid salt onto the ground nearby, with little-to-no gaseous emissions, as occurred at Chernobyl. The liquid would then cool down and solidify in place. Without potential for meltdowns or gaseous dispersion, a LFTR is generally considered “passively safe”.

Economics

A LFTR is low-pressure, and won’t require a large concrete containment building. A LFTR is high-temperature, allowing for efficient conversion of thermal energy to electricity. A LFTR’s fuel salt responds to an increase/decrease in electricity demand from the grid by contracting/expanding in order to increase/decrease the number of fissions that occur – natural and rapid “load-following”.

Summary

A LFTR incorporates design features known to have many benefits, beyond just the ones outlined here. FEI encourages adoption of policies that support expansion of good nuclear technologies to become a major part of its energy portfolio. The repeal of unnecessary impediments or bans will allow investment to proceed and encourage adoption of desirable technologies like LFTR.

Thank you for the opportunity to make this submission.

Sincerely,

Kirk Sorensen, President
Flibe Energy, Inc.
Huntsville, Alabama, USA