

Harvard Club - Box 126  
27 West 44th Street  
New York, NY 10036  
[john@johnkarls.com](mailto:john@johnkarls.com)  
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>>>>> ( Please send questions  
( or comments by e-mail  
( since itinerary is fluid

The Honorable Cory A. Booker  
U.S. Senator - New Jersey  
Presidential Campaign Headquarters  
540 Broad Street  
Newark, N.J. 07102

Dear Senator Booker:

Re: Solving Global Warming 100% Without Military Action  
A Subject We Will Be Requesting Every Presidential-Debate Moderator To Raise

For the past 13.5 years, I have facilitated a public-policy study group in the vicinity of my Utah ski house comprising approximately 150 members including numerous science professors and including a PhD in Nuclear Engineering from the U.S. National Nuclear-Research Laboratory at Oak Ridge - U/Tenn.

[Our Nuclear Engineering PhD has led several of our studies over the years concerning thorium fission and other nuclear issues.]

Every time our group has focused on global warming, I have begun the discussion by asking for a show of hands by anyone who favors invading militarily, for example, China to prevent it from bringing on stream every week one new monster-size coal-burning electrical-power generation plant.

In all of those meetings over the years, nobody has ever shown the slightest interest in using military force to coerce any country into using an uneconomic energy source, thereby reducing the standard of living of its citizens.

However, luckily there is an economic energy source that is abundant and safe.

You may not be aware that thorium/fission was proved feasible in the 1960's when the U.S. National Nuclear-Research Laboratory at Oak Ridge TN conducted a successful 18-month continuous demonstration project comprising a thorium-fueled nuclear reactor. And that President Nixon caused the nation to turn away from thorium (and toward uranium and plutonium) because thorium is incapable of exploding or being utilized to produce nuclear weapons.

Both conventional uranium fission and proven thorium/fission share all of the following advantages: (a) producing no greenhouse gases; (b) eliminating the dependence of the U.S.\* and its allies on members of OPEC (the long-standing Organization of Petroleum-Exporting Countries) and, in the case of Europe, natural gas imports from Russia (in addition to oil & gas imports from OPEC); and (c) eliminating the gaping U.S. balance-of-payments deficit and resulting piling up of our foreign national debt.

However, proven thorium/fission has the following advantages over conventional uranium/fission –

[These advantages are virtually identical to those listed by Dr. Victor Stenger in The Huffington Post - [https://www.huffingtonpost.com/victor-stenger/lfr-a-longterm-energy-so\\_b\\_1192584.html](https://www.huffingtonpost.com/victor-stenger/lfr-a-longterm-energy-so_b_1192584.html).]

(1) LFTR's (Liquid Fluoride Thorium Reactors) require minimal containment chambers because meltdowns are physically impossible since LFTR's operate near atmospheric pressure (this is both a safety and cost factor).

(2) LFTR's do not require elaborate cooling systems because they operate well below the boiling point of molten salt and can be passively cooled (this is also both a safety and cost factor).

(3) Thorium is so stable that, as mentioned above, it is impossible to make a nuclear weapon from thorium which is why the U.S. turned to uranium and plutonium instead of thorium.

(4) Thorium has such an incredibly-high "burn-up" that there is virtually no long-lived radioactive waste.

(5) LFTR's can safely consume uranium from decommissioned nuclear warheads and from spent uranium-reactor fuel rods. Indeed, the Oak Ridge MSRE in the 1960's was able to use U-235, Pu-239 and U-233 at the same time as thorium. [NB: Since former Senate Majority Leader Harry Reid of NV prevented the opening of Yucca Mountain NV as the repository for our spent uranium-nuclear fuel rods, the spent uranium-nuclear fuel rods have been left on site at each uranium-nuclear plant to remain cool in the equivalent of home swimming-pools even though many of those uranium-nuclear plants are situated in high-volume air corridors!!!]

(6) Because LFTR's are economically practical in small sizes, they can be mass-produced in factories and assembled near electrical demand so that the huge energy losses during electricity transmission are virtually eliminated -- though to replace huge uranium reactors, it would only be necessary to assemble several of the small modular thorium reactors into a larger plant.

(7) In addition, thorium is so plentiful that proven thorium supplies are capable of supplying 100% of the world's energy (not just electricity) for more than 1,000 years. Indeed, virtually all of India's "sand" beaches comprise thorium.

[Our calculation was 80 years of "proven" reserves of uranium for current (electricity only) usage multiplied by 3 (the minimum abundance factor of "proven" thorium reserves vs. "proven" uranium reserves) multiplied by 99 (usable thorium energy content vs. usable uranium energy content) multiplied by 5.8% (the percentage of total worldwide energy including transportation fuels, that comes from nuclear plants) = 1,378 years.]

Proven thorium/fission has all of these advantages and only needs 2-3 years of final development = the equivalent of having already produced a Ford Model T proving an automobile is feasible but still needing 2-3 years of development (and relatively-modest funding) to design a Ford Fusion for mass production.

The relatively-modest funding for the 2-3 years of final development has been estimated by many experts at \$5 billion to build the first commercial prototype.

[ThEC15 was a worldwide conference on thorium research that was held in Mumbai, India, in 2015 by the Government of India and two of its agencies, BARC and NPCIL, along with HBNI and IThEO. The ThEC15 website (<http://www.thoriumenergyworld.com/thec15-mumbai.html>) contains 127 papers and speeches by 46 speakers from 30 different nations.]

So the question you are respectfully requested to consider is whether the U.S. Government should appropriate \$5 billion to build the first commercial prototype.

Respectfully submitted,

John S. Karls  
JD, Harvard Law School, 1967  
Who's Who in American Law, 1988-2003  
Who's Who in America, 1988-2003  
Who's Who in the World, 1994-2003

PS: It is well known that large volcanic eruptions will throw into the atmosphere gases and dust particles whose shading of incoming solar radiation can cool the earth for months and even years.

[This has caused some wags to remark (however, true) that Global Warming can be solved by occasional, small nuclear wars which, of course, will be much more likely if a nuclear-arms race occurs between “The World’s Greatest ‘State Sponsor of Terrorism’” (The U.S. State Department’s long-standing legally-required description of Iran) and “The Gulf Cooperation Council” (Saudi Arabia, Kuwait, Qatar, Bahrain, The United Arab Emirates, and Oman).]

In a similar vein, there has been research on seeding the earth’s atmosphere with various substances to achieve the same effect as volcanic eruptions or small nuclear wars. Such an approach (vs., for example, merely adopting the most economical energy source which happens to have no carbon emissions) is likely, at the very least, to incur legal liability. After all, The Russian Federation refused to ratify The Kyoto Protocol for many years because Global Warming would increase Siberia’s growing season -- until the European Union finally agreed to subsidize Russia’s economic loss. [Similar economic disparities were bridged in the Paris Climate Accord by the U.S. promising to adopt uneconomic measures virtually immediately in return for the world’s other great carbon polluters’ adopting uneconomic measures in the distant future.]

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- \* The seventh paragraph listing three advantages shared by uranium and thorium fission said “(b) eliminating the dependence of the U.S.\* and its allies on members of OPEC (the long-standing Organization of Petroleum-Exporting Countries) and, in the case of Europe, natural gas imports from Russia (in addition to oil & gas imports from OPEC).”

The reason for the asterisk was that it has been widely reported recently that the U.S. has become “energy independent” so that it no longer must import oil & gas from the world market which is dominated by OPEC.

These reports are **misleading if not fraudulent**.

They are based on an article from Bloomberg (<https://www.bloomberg.com/news/articles/2018-12-06/u-s-becomes-a-net-oil-exporter-for-the-first-time-in-75-years>) which claims, under a banner headline “THE U.S. JUST BECAME A NET OIL EXPORTER FOR THE FIRST TIME IN 75 YEARS” **that the U.S. was a “net oil exporter” FOR ONE WEEK in early December 2018 -- while admitting in the body of the article that the net-export period would be “likely brief”!!!**

No wonder they are confessing their banner headline is misleading if not fraudulent!!! [Though that did NOT prevent other news media outlets from repeating the false claim, many citing Bloomberg and most of the rest citing no authority at all.]

By way of background, <http://www.cia.gov>’s World Factbook reports for 2017 (the last year for which it contains such data) that the U.S. produced only 9.351 million barrels/day of crude oil and had to import (net) 6.811 million b/d. The CIA also reported a slight natural gas surplus (total gas production of 772.8 billion cubic meters in 2017 vs. consumption of 767.6 billion cubic meters). In other words, the CIA is reporting for 2017 total crude oil usage of 16.162 million b/d compared to total natural gas usage of only 13.088 million b/d of crude oil equivalent. **Which meant the C.I.A. was effectively reporting a SHORTFALL in energy independence of 23% for 2017!!!**

But what about 2018 and beyond???

Bloomberg “cherry picked” ONE WEEK during December 2018 for its claim that the U.S. had become “a net oil exporter.” Which Bloomberg CONFESSES was based on statistics from the American Petroleum Institute and the U.S. Department of Energy’s Energy Information Administration.

HOWEVER, based on DOE’s Energy Information Administration is an American Petroleum Institute graph available at <https://www.api.org/oil-and-natural-gas/energy-primers/us-crude-exports> that shows the NET-IMPORT GAP narrowed slightly in 2018 BUT IS NOT EVEN EXPECTED TO BE ELIMINATED BY 2040, THE END OF THE PERIOD IN THE GRAPH!!!

Shame on Bloomberg!!!