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>>>> ( Please send questions  
( or comments by e-mail  
( since itinerary is fluid

Ms. Virginia M. Rometty  
Chair, President and CEO  
IBM Corporate Headquarters  
1 New Orchard Road  
Armonk, NY 10504

Dear Ms. Rometty:

Re: Alphabet/Google Powering Their “Cloud” With Cheap Hydroelectricity  
IBM’s Developing Cheap/Safe Thorium-Fission To Power Its Cloud

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 such as Fukushima Daiichi.]

We have read with interest the sixth chapter of George Gilder’s “Life After Google: The Fall of Big Data and the Rise of the Blockchain Economy” in which he describes how Google located its acres and acres of warehouses containing all the computer equipment providing Google’s version of the “cloud” next to an old dam in Oregon’s Columbia River Gorge so that Google could displace previous users of cheap hydroelectricity.

And it occurred to us that IBM might be interested in developing an energy source for its “cloud” that would be cheap and safe.

In addition to which it could open a new line of business for IBM, the profitability of which might cause George Gilder to write about “life after death”!!!

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.]

If you have any questions or comments, we would be delighted to receive them at ReadingLiberally-SaltLake@johnkarls.com. Thank you for your consideration.

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