From: Rainer Schottlaender [mailto:rainer.schottlaender@web.de]
Sent: Friday, October 08, 2010 1:24 PM
To: BRC
Cc: mary.woollen@blueribboncommission.net
Subject: Mary Woollen...Tim Frazier... New Thorium Reactor Design...attention: All 15 BRC members and DOE

Good morning Mary Woollen, Tim Frazier:

Today I have discovered the DOE-program

http://www.pdfdownload.org/pdf2html/pdf2html.php?url=http%3A%2F%2Fwww.ne.doe.gov%2FgenIV%2Fdocuments%2Fgen_iv_roadmap.pdf&images=yes

page 48-52:

The VHTR is a graphite-moderated, helium-cooled reactor with thermal neutron spectrum. It can supply nuclear heat with core-outlet temperatures of 1000°C. The reactor core type of the VHTR can be a prismatic block core such as the operating Japanese HTTR, or a pebble-bed core such as the Chinese HTR-10.

So I hope it makes sense that the DOE people working on this Generation IV program study my last weekend patent application.

Thanks for the fast translation in your language here:

http://www.brc.gov/comments_October10.html

Description

Tubular Bundle Reactor (RBR)

The RBR is a further development of Prof. Rudolf Schulten developed ball heap reactor. Aim is the use of the occurring in earth crust around 500mal more often than U235 Th232 for energy production.
State of the art is 15 MW AVR and the 300 MW THTR and its copies/developments in China ((http://www.inet.tsinghua.edu.cn/english2/academics.htm)), South Africa and India.
So far the fuel balls - like an hourglass - through the reactor wandered this type of nuclear power plant.
My invention of RBR raises may be very simple but effective at once three of the previous problems:
1. it can give no traffic jam at the ball outlet.
2. Neutron control rods can be installed between the pipes frictionless. There can be no ball broken then.
3. The fuel balls hike ordered one after the other by the reactor.
New is that so e.g. 1600 using pipes made of suitable material in the reactor core in the future in addition e.g. 40 x 40, e.g. from SiC or graphite.
Otherwise preserves the past - for many years successfully tested - technique.

Copyright: Rainer Schottlaender, Dipl.-Phys. Jastrower Weg 17 12587 Berlin am 4.10.2010

Von: "Rainer Schottlaender" <rainer.schottlaender@web.de>
Gesendet: 05.10.2010 14:30:08
An: mary.woollen@blueribboncommission.net
Betreff: New Thorium Reactor Design...attention: All 15 BRC members and DOE

Good morning BRC, DOE:

I am waiting for your decision about my idea/proposal to bury the rad-waste some hundred miles deep in magma where it is safe for millions of years.

CARPE DIEM - USE THE DAY is an old saying.

I have used the last days for my next patent application titeled RÖHRENBÜNDELREAKTOR (RBR).

AMERICAS NUCLEAR FUTURE IS THORIUM.

....because there are 500 times more Th232 resources on our earth than U235.

Looking into this forgotten technology I have (re)discovered the KUGELHAUFENREAKTOR (AVR/THTR-300), developed here in Germany in the 50´s and 60´s.

I have thought how this idea can be improved.

My first idea to use D2O-steam instead of He seems to be not good, because Dr.ing. Cleve (80) remembered that this was discussed already 50 years ago with the AVR-inventor Prof. Schulten.

I do not know today if my next idea was already discussed.

The fact that I did the work of a patent application shows that I am pretty convinced:

Description / description tubular bundle reactor (RBR) the RBR is a further development of Prof. Rudolf Schulten developed ball heap reactor.

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12587 Berlin am 4.10.2010

It seems that DOE goes in the moment another way:

http://www.osti.gov/energycitations/servlets/purl/885991-GLJP6b/885991.pdf

You find now here the arguments for the MSBR/LFTR and against the AVR/THTR emailed to me from

darryl siemer <d.siemer@hotmail.com> **Gesendet:** 07.09.2010 18:26:36 **An:** rainer.schottlaender@web.de **Betreff:** RE: Thorium ...attn: . Chu / Frazier / Hamilton / Scowcroft / BRC / Siemer / Kunze / Cleve

I am aware of pebble bed reactors & also of the fact that adding thorium to their fuel kernals should enhance overall fuel efficiency.

However, I'm also aware of the following facts:

1) they have a long history of operational problems primarily due to fuel kernal imperfections and localized over heating...my RBR-idea might solve these problems

2) those same problems cause them to be much dirtier (release more radionuclides) than is usually assumed/claimed...really ?

3) their fuel is expensive to produce...look at China...they bought the german fuel-manufacturing plant 20 years ago and continued the work

4) their fuel is extremely difficult (expensive) to reprocess...Dr. Cleve says: 60 % of the Th232 burns up....

5) 14C production/release is apt to be politically problematic...no 14C-release is possible

6) pebble bed reactors have very low volumetric energy densities which means that they are physically large/watt & therefore expensive to build....I think only the first prototypes are expensive..

7) their chief intrinsic safety advantage (can survive a loss of coolant incident) would only "work" for a small reactor - maybe 200 MWe max ...yes it seems that small units are better...China goes this way in the moment

8) achieving breakeven fissile production (breeding) in one is apt to be impossible due to neutron poison build-up within the pebbles (all solid fuel reactors suffer from this)...

...I do not know enough about this yet.