Commission d'examen conjoint du projet de stockage dans des couches géologiques profondes

PMD 14-P1.64A

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#### **Presentation from**

**Xylene Power Ltd.** 

#### Présentation de

**Xylene Power Ltd.** 

In the Matter of

In the Matter of

#### **Ontario Power Generation Inc.**

OPG's Deep Geological Repository (DGR) Project for Low and Intermediate Level Radioactive Waste **Ontario Power Generation Inc.** 

Installation de stockage de déchets radioactifs à faible et moyenne activité dans des couches géologiques profondes

Joint Review Panel

Commission d'examen conjoint

September 2014

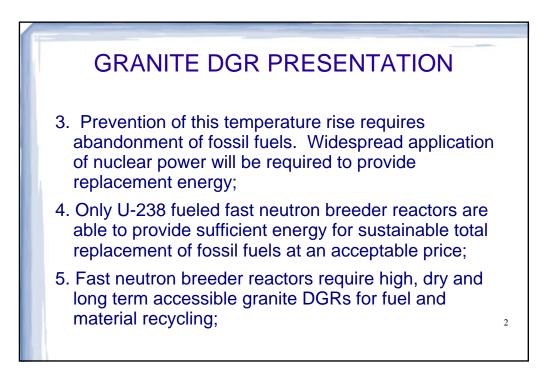
septembre 2014

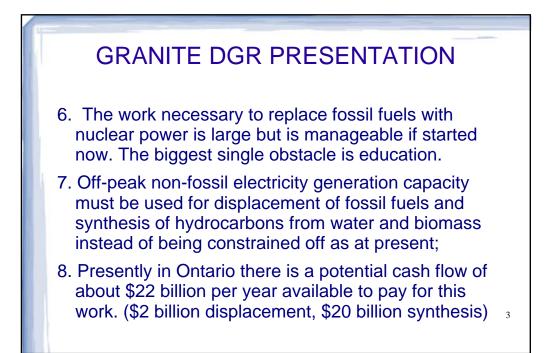


#### **GRANITE DGR PRESENTATION**

1. This presentation focuses on reasons why the DGR should be high, dry, accessible and formed in granite instead of low, wet, inaccessible and formed in limestone as is currently advocated by NWMO and OPG.

2. The atmospheric CO2 concentration is rising. When the atmospheric CO2 concentration reaches 650 ppmv to 800 ppmv there will be a life threatening rise in atmospheric temperature due to a rapid fall in planetary albedo. This temperature increase will be irreversible due to CO2 released via ocean warming;

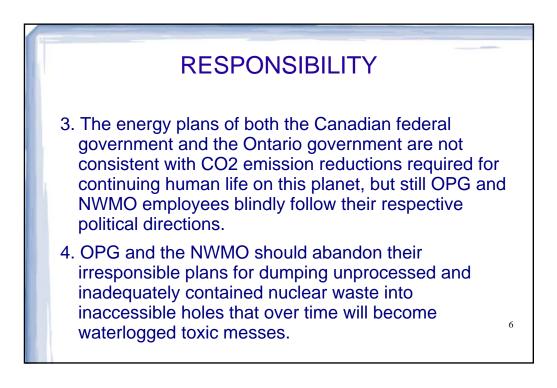


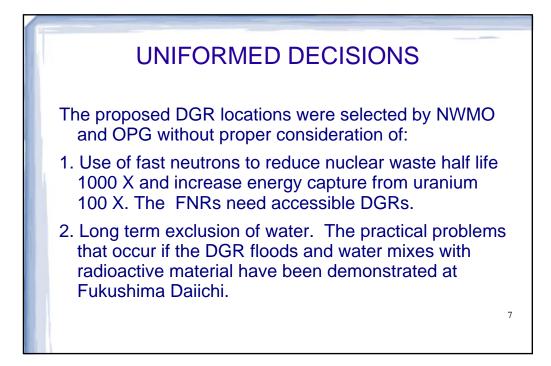


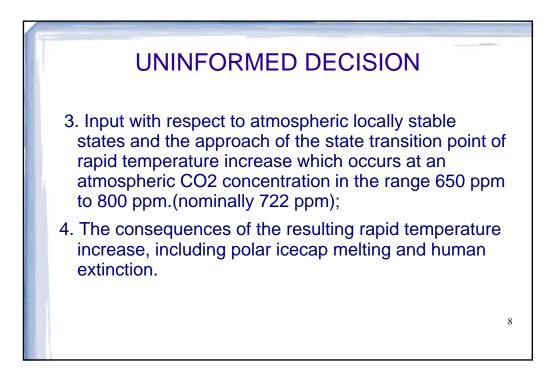


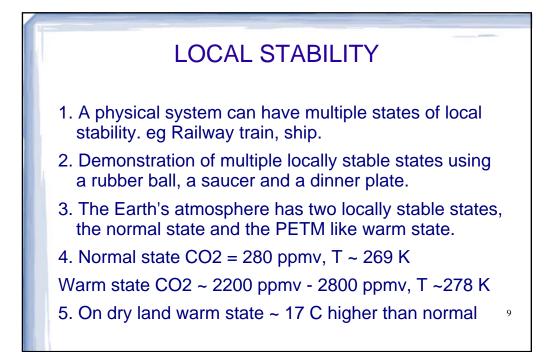
## RESPONSIBILITY

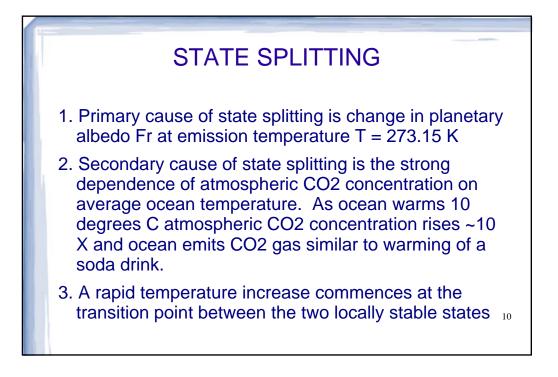
- It is the responsibility of professional engineers employed by OPG and the NWMO to advise their superiors in writing when the directions that the engineers receive are not consistent with physical laws and / or public safety;
- There is no excuse for lack of relevant knowledge. Just because the relevant branch of physics was dropped from the engineering curriculum does not relieve professional engineers of responsibility for public safety;







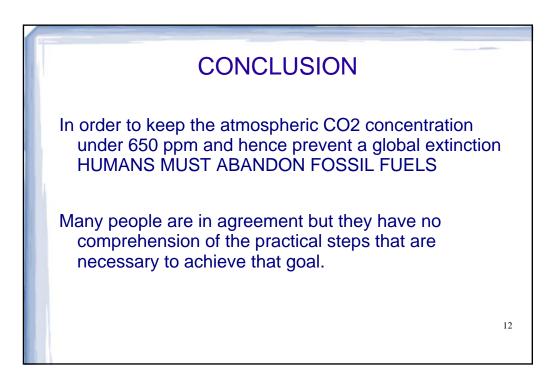


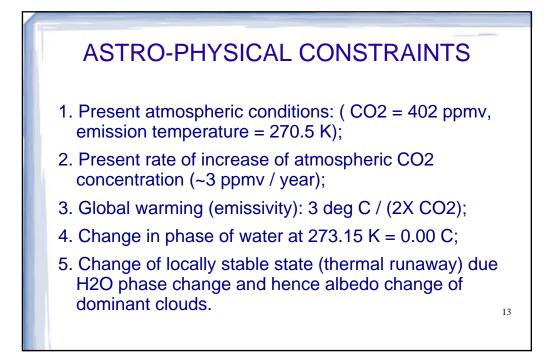




Paleocene-Eocene Thermal Maximum (PETM) 55.5 million years ago is revealed by mass spectrometry of fossils and ocean sediments

- -20,000 years warm
- -200,000 year time constant for recovery
- -500,000 year recovery
- -polar icecaps completely melted
- -extinction of all animals larger than a mole
- -bio-matter and fossil fuels burned to become CO2





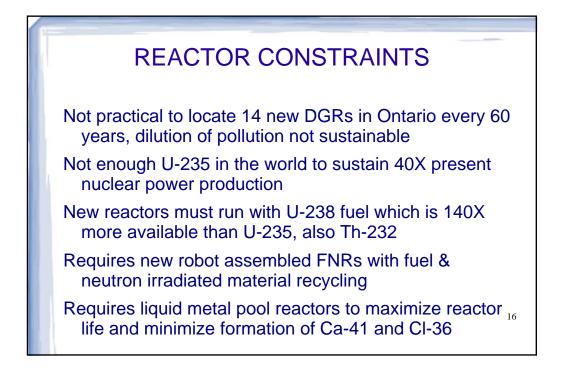
# TIME TO RAPID TEMPERATURE INCREASE At present rate of increase of atmospheric CO2 concentration: (722 ppmv – 402 ppmv) / (3 ppmv / year) = 106.6 years At projected rate of increase of atmospheric CO2 concentration: (722 ppmv – 402 ppmv) / (5 ppmv / year) = 64 years FAILURE TO MEET THIS TIME CONSTRAINT MEANS THAT EVERYONE DIES

#### DISPLACEMENT OF 80 X 10<sup>6</sup> Barrels Per Day Of Petroleum Now

WORLD WIDE: 20X existing installed nuclear capacity ONTARIO: 3X existing installed nuclear capacity.

IN 60 YEARS:

WORLD WIDE: 40 X existing installed nuclear capacity ONTARIO: 7X existing installed nuclear capacity



## PROBLEM ISSUES TO BE FACED

Transportation of highly radioactive materials
11 tonnes of plutonium per reactor
Th-232 breeding yields concentrated U-233
Olympic swimming pool volume of liquid sodium requiring ongoing exclusion of air and water
Prevention of smart bomb and like attacks
Prevention of plutonium theft (need He-3)
Public & specialist education
Procrastinating politicians

## SPECIALIST TRAINING

A huge problem facing implementation of breeder reactors and related DGRs is training of senior engineers. Due to 50 years of Canadian government under funding the best people have pursued parallel careers in microelectronics, control engineering, biomedical engineering, patent law, etc. Those who have directly relevant experience in FNR design and related radio chemistry are already past retirement age. Educating a new team will be an expensive and time consuming challenge.

