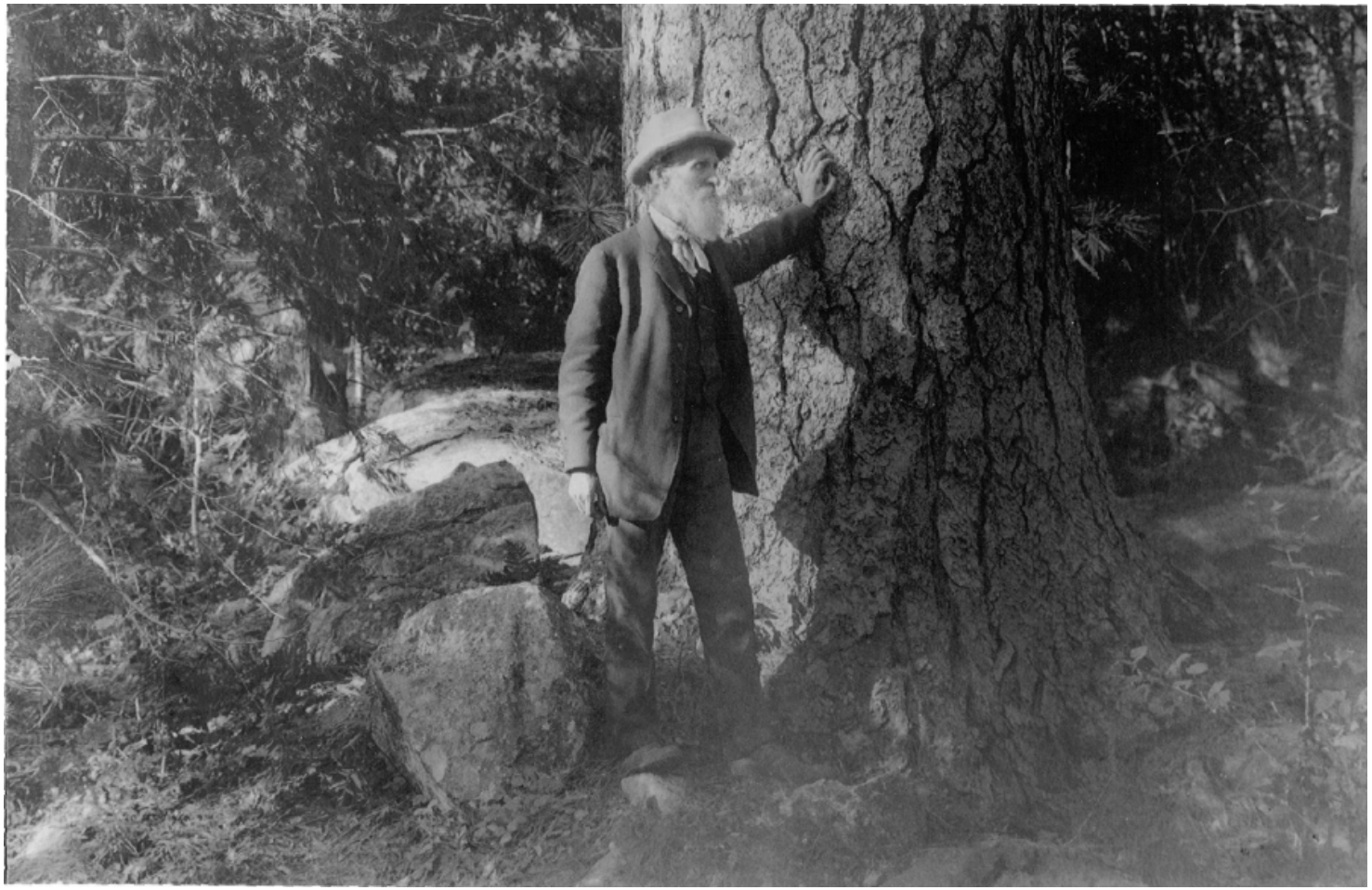
Earth Week:
Palisades Forum

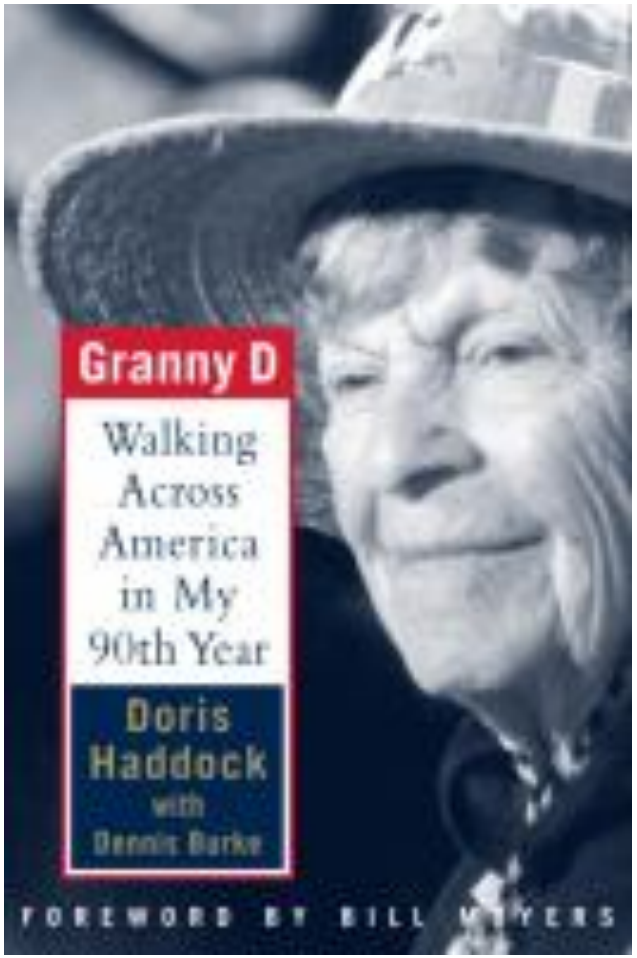
Fukushima, Chernobyl, Three Mile Island…Where Next?!

Kevin Kamps, Beyond Nuclear & Don't Waste MI
First Congregational Church, Kal., MI
April 21, 2016

Happy birthday, John Muir!
(April 21, 1838-Dec. 24, 1914)



“Granny D,” Doris Haddock (Jan. 24, 1910-March 9, 2010)



McCain-Feingold & Granny D—Capitol Rotunda arrest, 4/21/2000

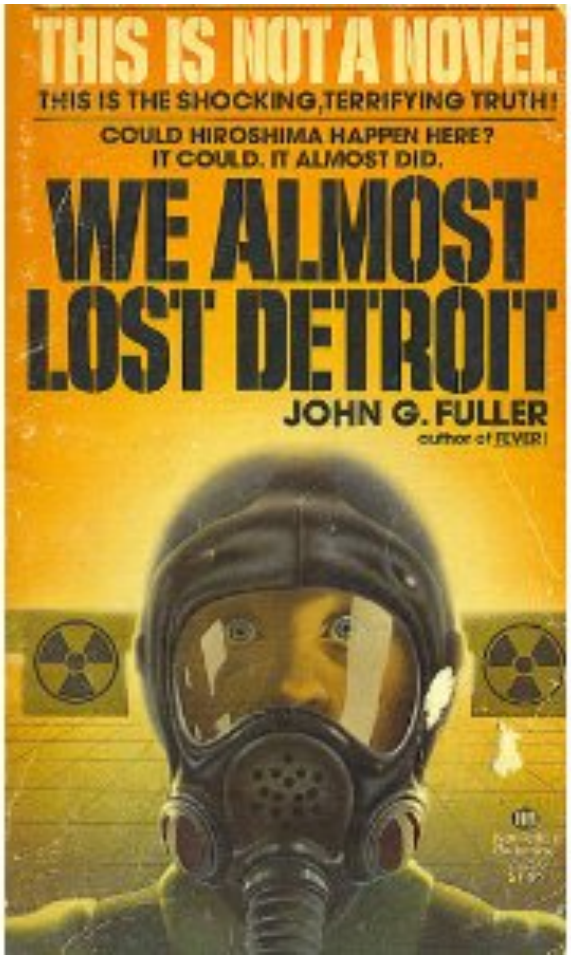
Happy Earth Day!

A Lot to Lose

Fukushima + 5
(March 11, 2011 to…)

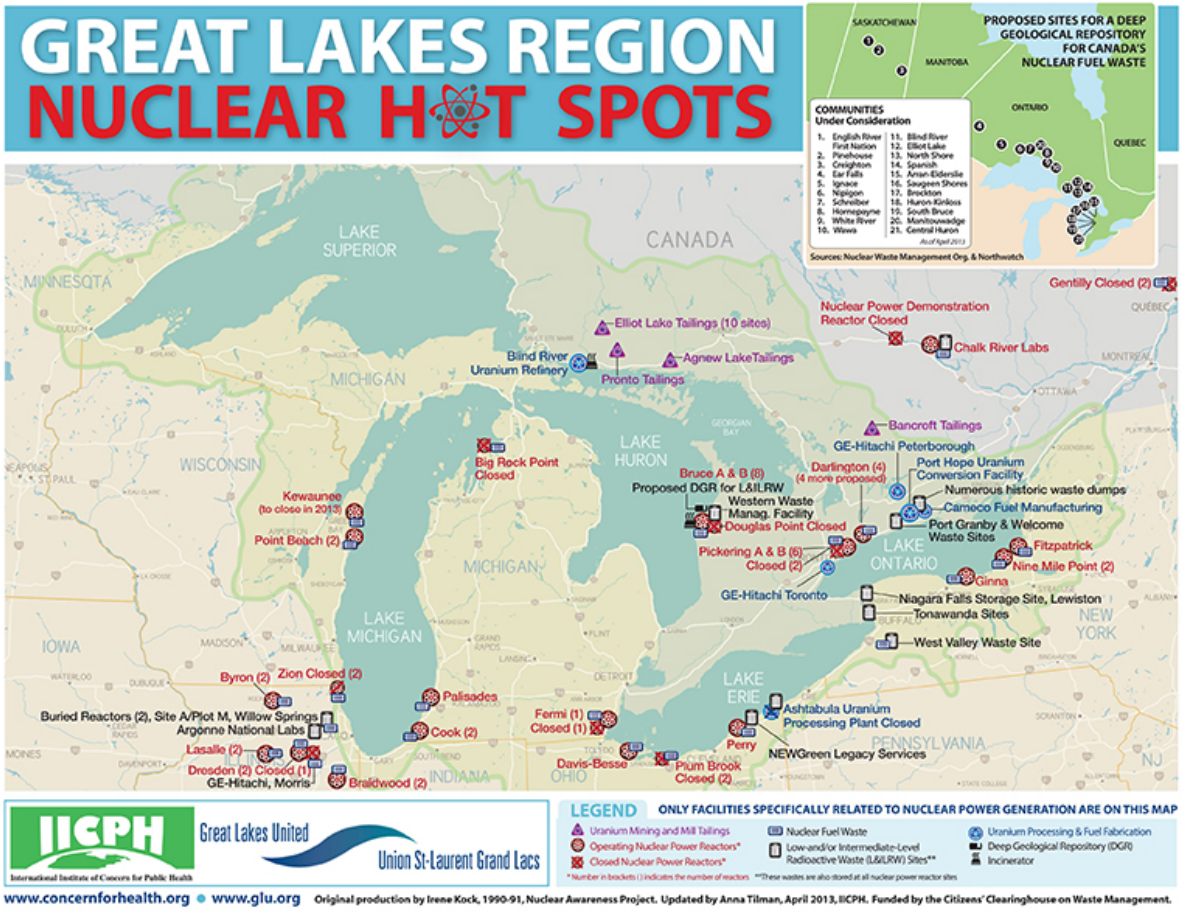
Chernobyl + 30
(April 26, 1986 to…)

Fermi 1 + 50
(October 5, 1966 to…)



“The Monster on the Beach”

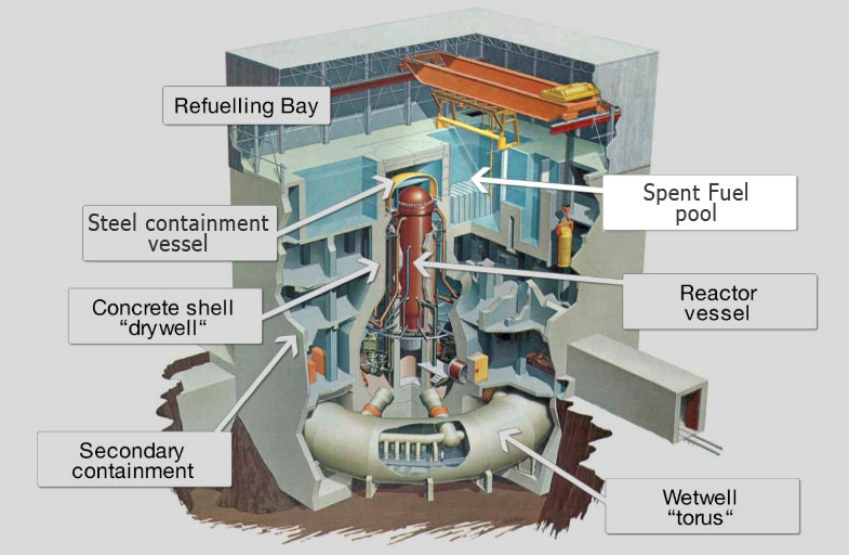
One of Many


GREAT LAKES REGION
NUCLEAR HOT SPOTS
PROPOSED SITES FOR A DEEP GEOLOGICAL REPOSITORY FOR CANADA'S NUCLEAR FUEL WASTE
COMMUNITIES Under Consideration
Sources: Nuclear Waste Management Org. & Northwatch
LAKE SUPERIOR
CANADA
MINNESOTA
MICHIGAN
WISCONSIN
LAKE HURON
LAKE MICHIGAN
LAKE ONTARIO
LAKE ERIE
IOWA
INDIANA
OHIO
PENNSYLVANIA
NEW YORK
Elliot Lake Tailings (10 sites)
Blind River Uranium Refinery
Agnew LakeTailings
Pronto Tailings
Nuclear Power Demonstration Reactor Closed
Chalk River Labs
Gentilly Closed (2)
Bancroft Tailings
GE-Hitachi Peterborough
Port Hope Uranium Conversion Facility
Numerous historic waste dumps
Cameco Fuel Manufacturing
Port Granby & Welcome Waste Sites
Darlington (4) (4 more proposed)
Bruce A & B (8)
Proposed DGR for L&ILRW
Western Waste Manag. Facility
Douglas Point Closed
Big Rock Point Closed
Kewaunee (to close in 2013)
Point Beach (2)
Pickering A & B (6) Closed (2)
Fitzpatrick
Nine Mile Point (2)
Ginna
GE-Hitachi Toronto
Niagara Falls Storage Site, Lewiston Tonawanda Sites
West Valley Waste Site
Byron (2)
Zion Closed (2)
Palisades
Buried Reactors (2), Site A/Plot M, Willow Springs Argonne National Labs
Cook (2)
Fermi (1) Closed (1)
Ashtabula Uranium Processing Plant Closed
Perry
NEWGreen Legacy Services
Lasalle (2)
Dresden (2) Closed (1) GE-Hitachi, Morris
Braidwood (2)
Davis-Besse
Plum Brook Closed (2)
IICPH
International Institute of Concern for Public Health
Great Lakes United
Union St-Laurent Grand Lacs
LEGEND
ONLY FACILITIES SPECIFICALLY RELATED TO NUCLEAR POWER GENERATION ARE ON THIS MAP
Uranium Mining and Mill Tailings
Operating Nuclear Power Reactors*
Closed Nuclear Power Reactors*
Nuclear Fuel Waste
Low-and/or Intermediate-Level Radioactive Waste (L&ILRW) Sites**
Uranium Processing & Fuel Fabrication
Deep Geological Repository (DGR)
Incinerator
* Number in brackets () indicates the number of reactors
** These wastes are also stored at all nuclear power reactor sites
www.concernforhealth.org • www.glu.org
Original production by Irene Kock, 1990-91, Nuclear Awareness Project. Updated by Anna Tilman, April 2013, IICPH. Funded by the Citizens' Clearinghouse on Waste Management.

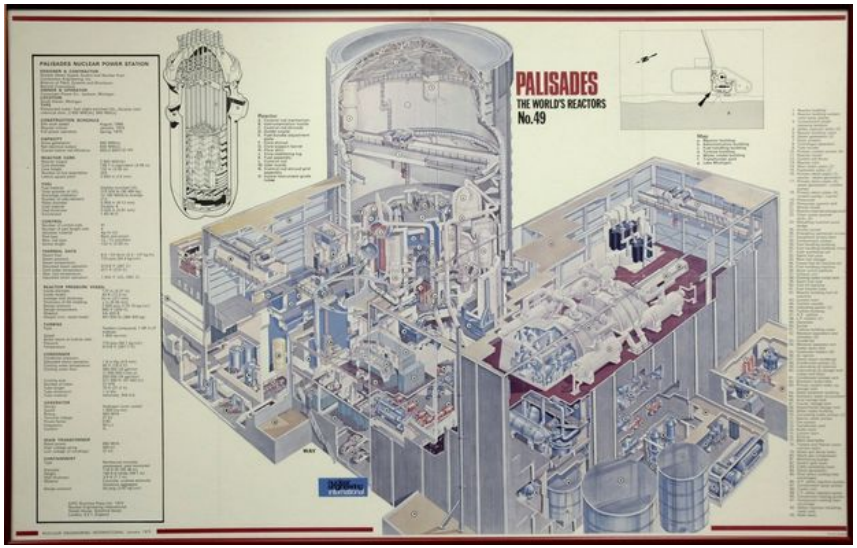

SHUT DOWN
before the
MELT DOWN

Reactor Risks

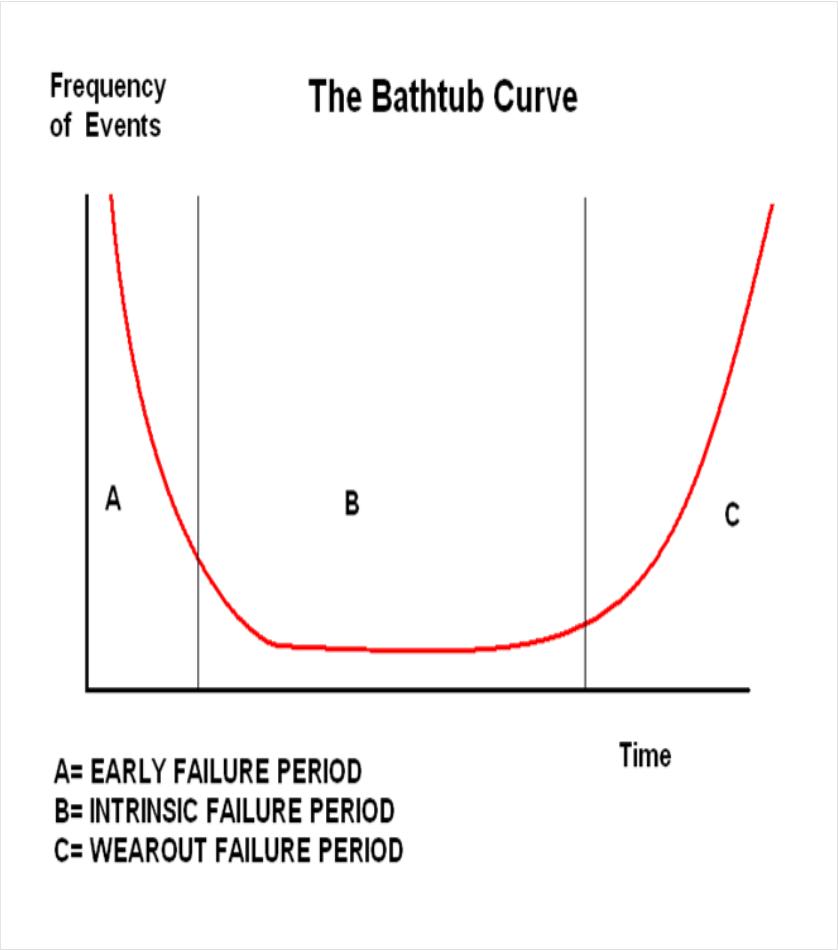
Fukushima 1-4 & Fermi 2 (GE Mark I BWR)



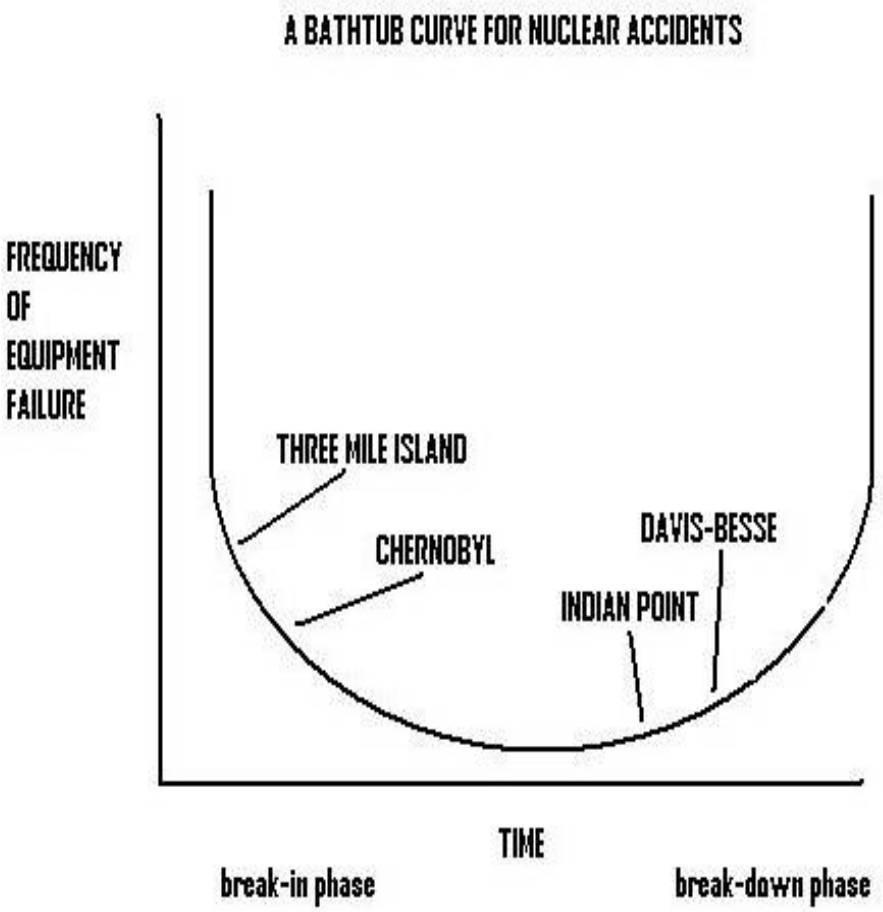
Palisades (Combustion Engineering PWR)



Bathtub Curve

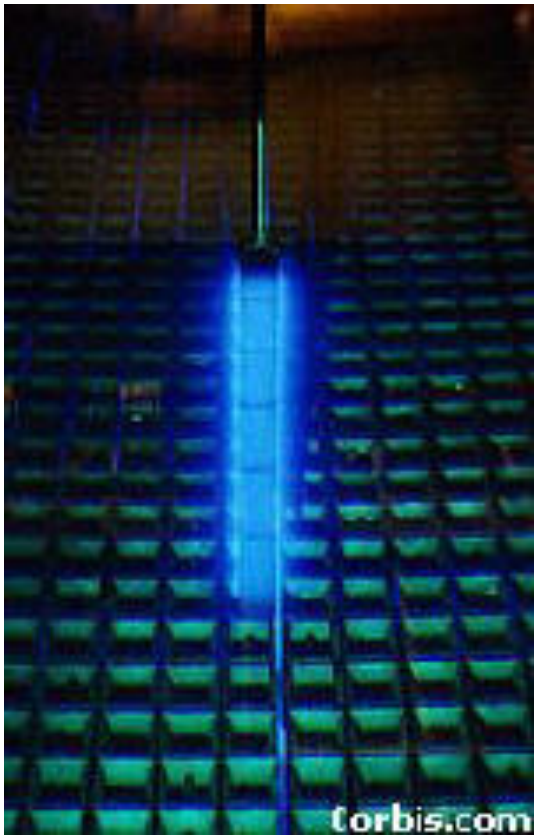


Bathtub Curve of Reactor Risks



Radioactive Waste Risks

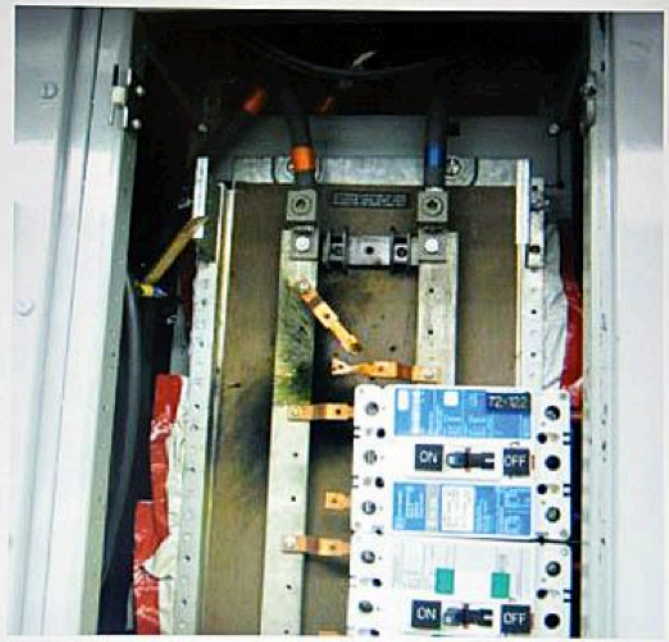
Pools



Dry Casks

Monetary Risks
to Taxpayers & Ratepayers

Palisades Reactor Risks (Sept. 25, 2011)



The distribution panel at Palisades where the disruption in electrical power started. Source: NRC.

Promises Promises (Tell Me Lies, Tell Me Sweet Little Lies)

Consumers Energy

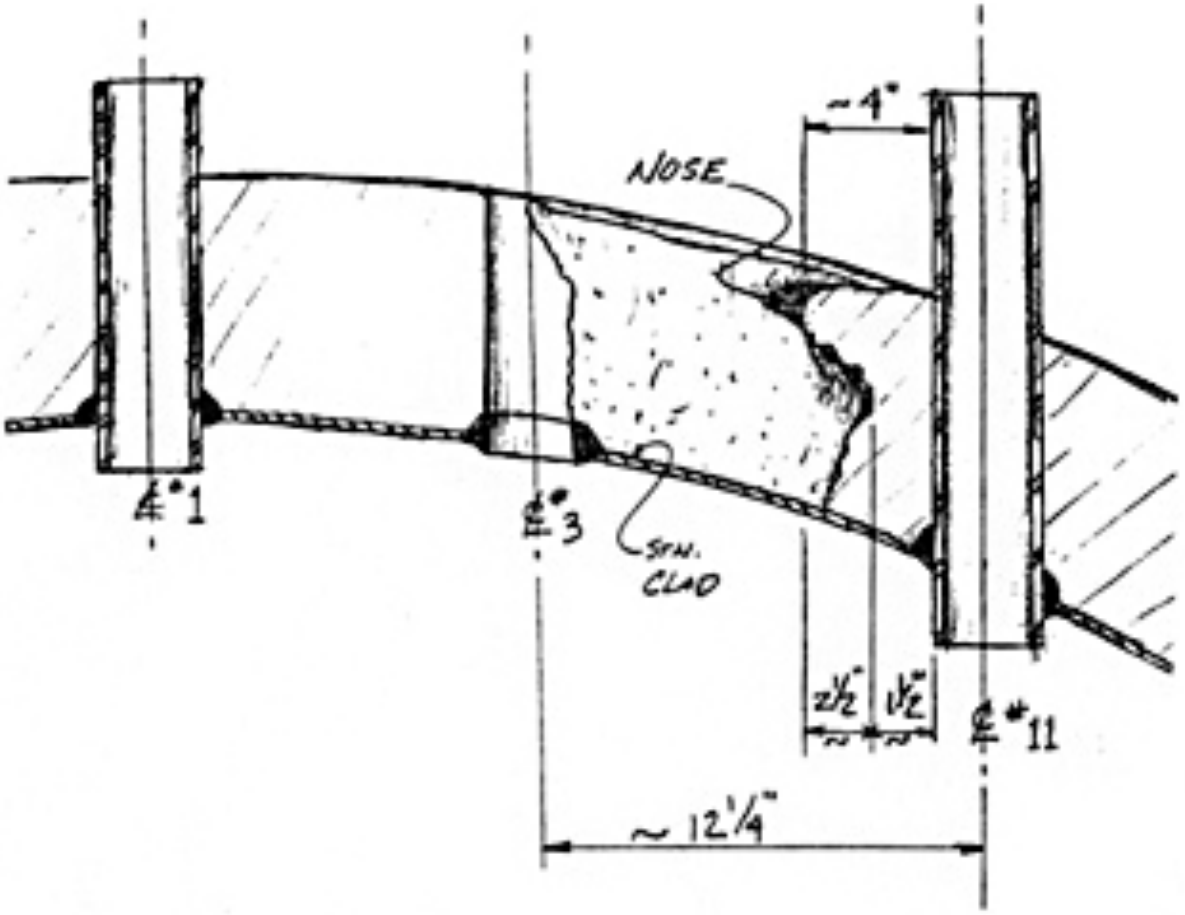
The Palisades Nuclear Power Plant

Highlights of Palisades include:

- Commenced commercial operation in 1971; current NRC operating license expires in 2011.
- License renewal application filed in March 2005; license renewal, anticipated early 2007, would extend the license to 2031.
- Qualified workforce of approximately 470 persons.
- Currently operated on behalf of Consumers by the Nuclear Management Company (NMC).
- Required significant future capital expenditures required above the routine $20M per year, including:
  - Reactor vessel head replacement
  - Steam generator replacement
  - Reactor vessel embrittlement concerns
  - Increasing NRC fees and fire protection requirements
  - Containment coatings and sump strainers

Palisades Reactor Vessel Head Replacement (by July 2007)?! (Davis-Besse Hole-in-the-Head Fiasco, 2002)

Red Rusty Boric Acid Deposits on Vessel Flange (12RFO)


~4"
NOSE
℄ 1
℄ 3
STN.
CLAD
2½"
1½"
℄ 11
~ 12¼"

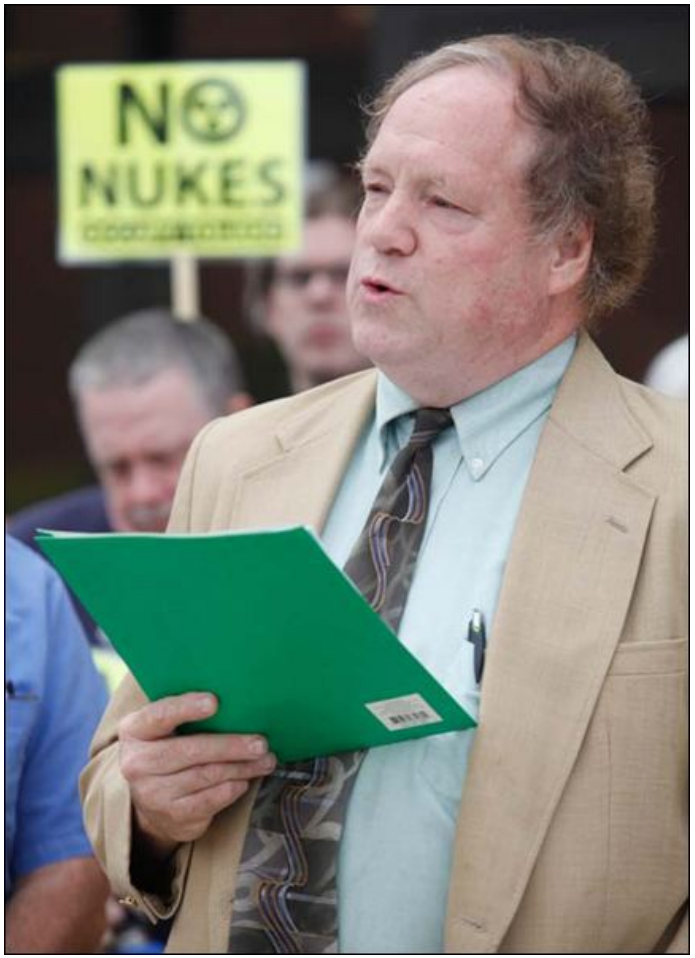
Steam Generator Replacement?! (Bruce, ~2010; Davis-Besse, 2014)

Inside of Steam Generator

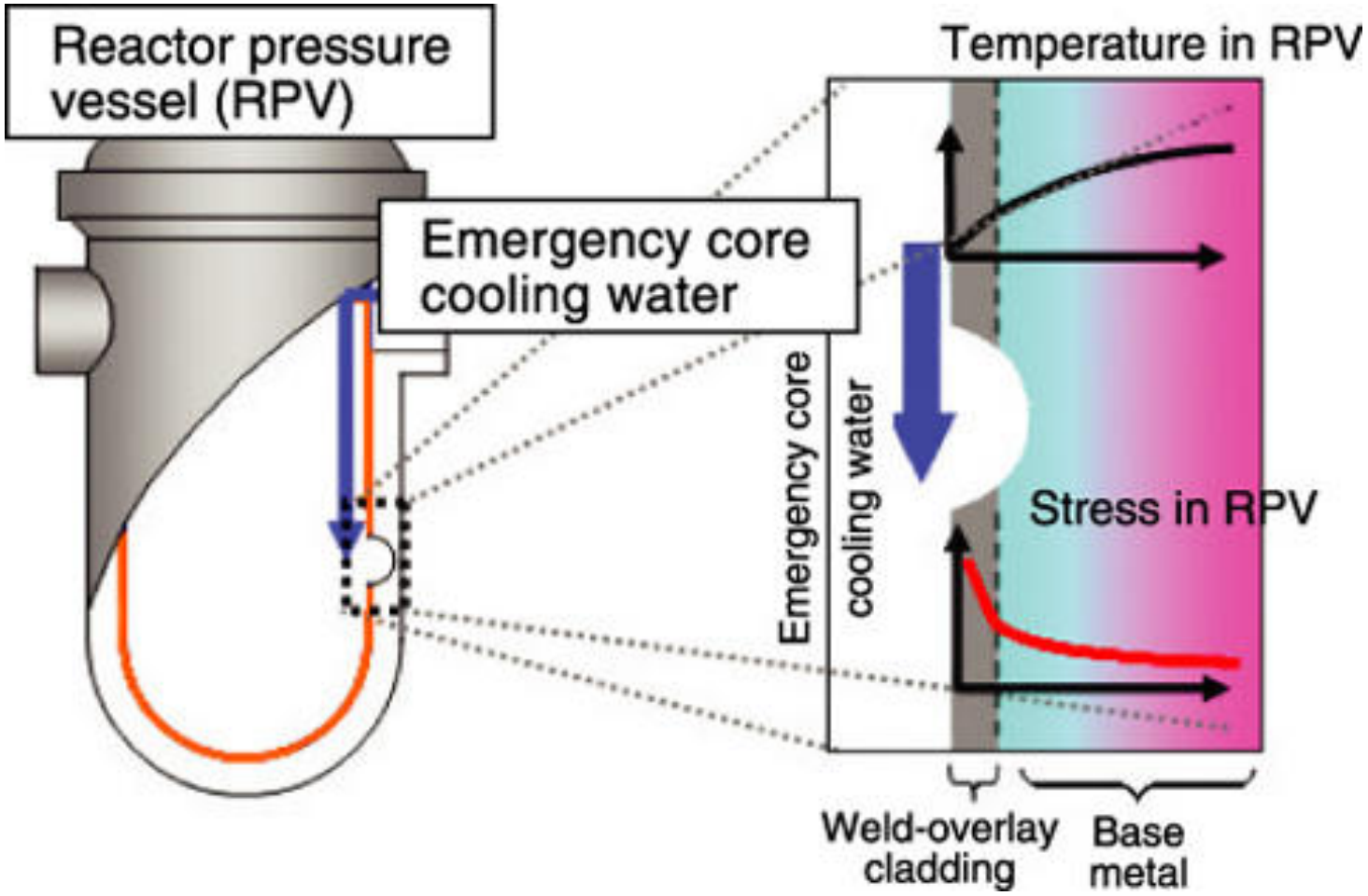
San Onofre 2 & 3

Arnie Gundersen, Chief Engineer, Fairewinds Associates, Inc.

Terry Lodge, Esq.



“Reactor vessel embrittlement concerns”…



Genkai-1, Japan

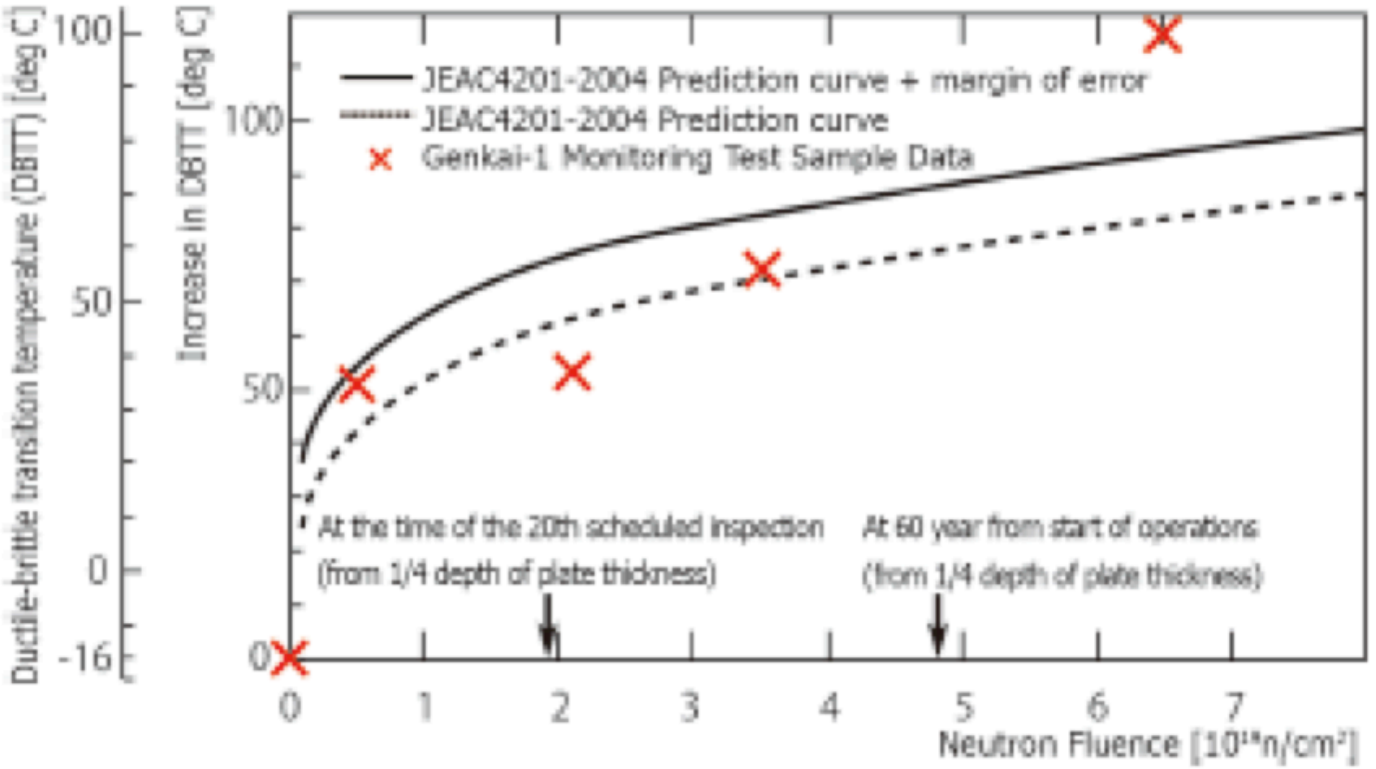


Figure 1.
Genkai-1 Monitoring Test Sample Data and JEAC 4201-2004 Prediction Curve

NRC Commissioners' tours

Chairman Jaczko, May 25, 2012

William Magwood IV, Late March, 2013

NRC Commissioners' tours

Kristine Svinicki, May 2013

Chairman Macfarlane, June 6, 2014

PTS at Palisades

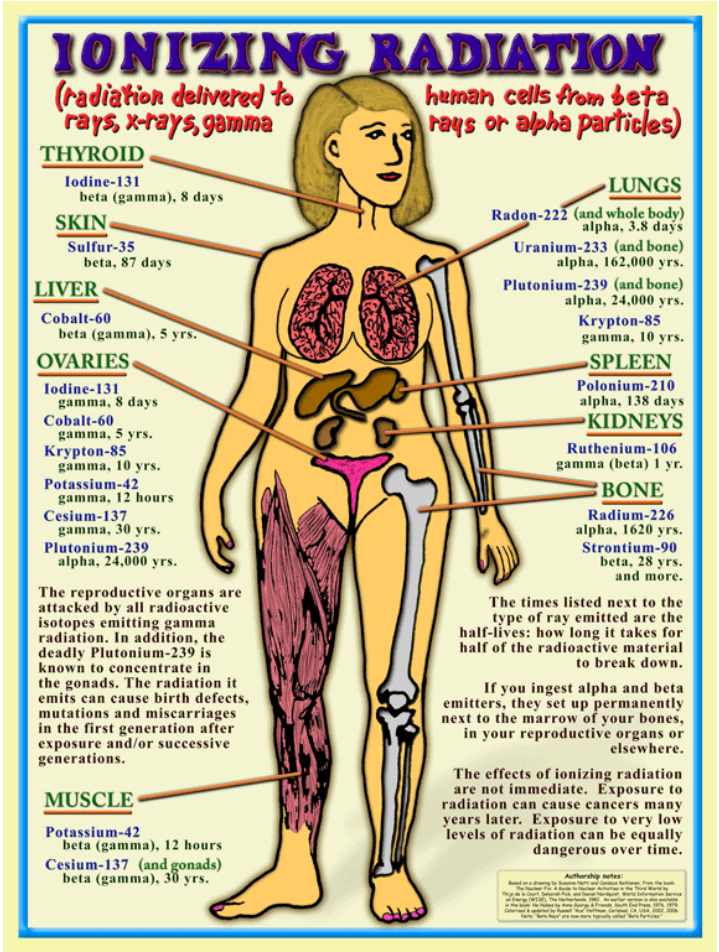
50-mile zone: Palisades

50-mile zone: Cook

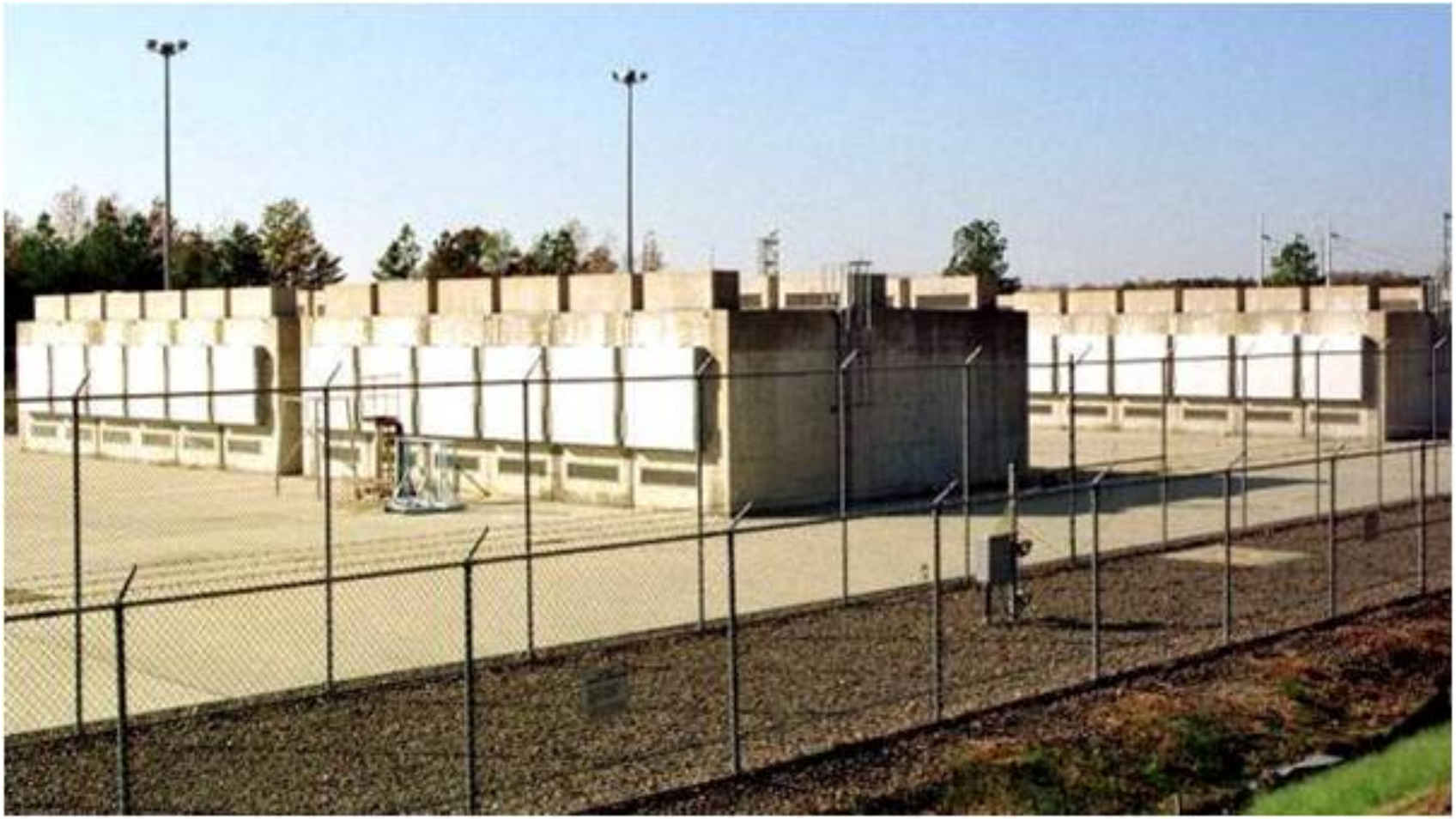
Don’t Cook the Great Lakes

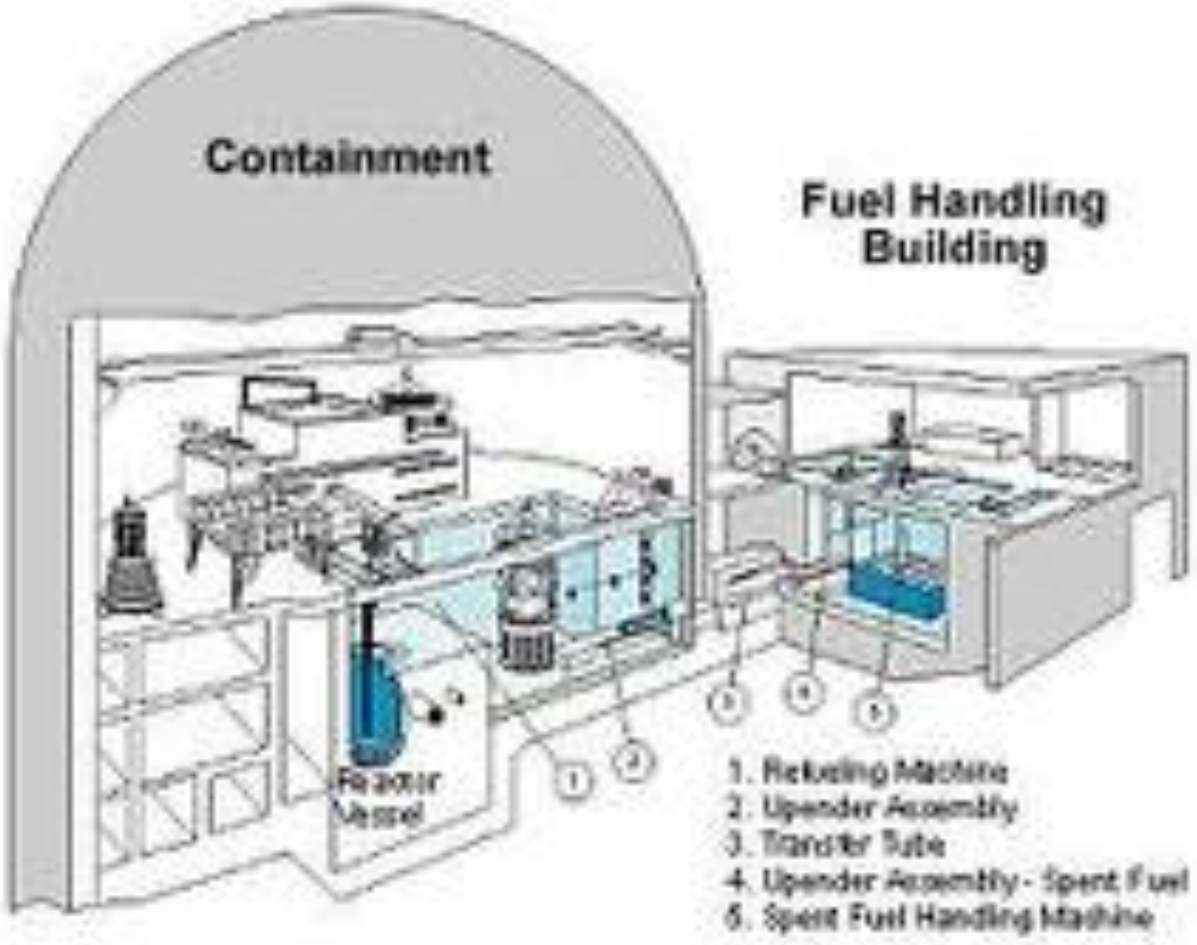
David Lochbaum, UCS

Reactor Risk: Iodine-131



Radioactive Waste Risks



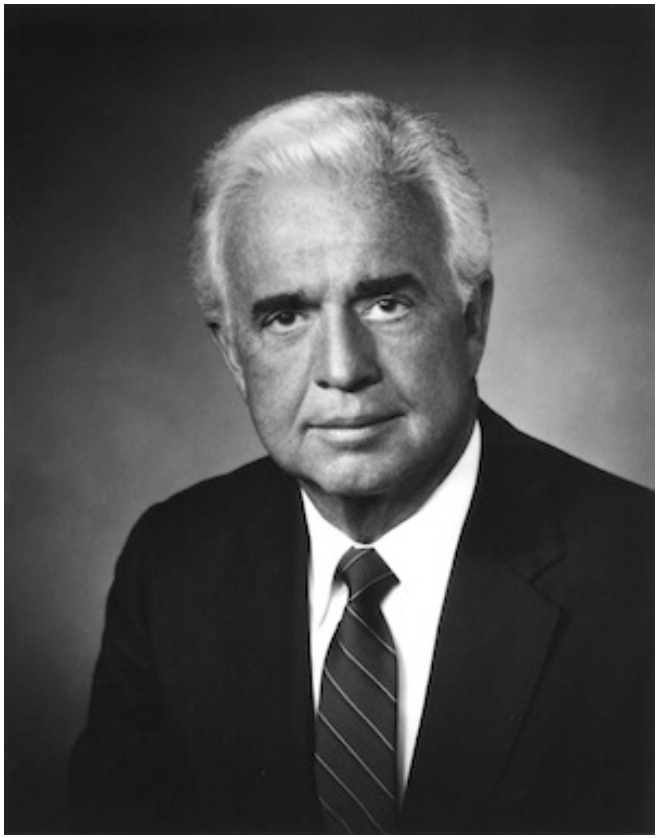

Containment
Fuel Handling Building
Reactor Vessel
1. Refueling Machine
2. Upender Assembly
3. Transfer Tube
4. Upender Assembly - Spent Fuel
5. Spent Fuel Handling Machine

Fukushima, March 17, 2011

Challenging Radioactive Risks

Mary Sinclair, Don't Waste MI

"Eternal General" Frank Kelley



Palisades Watch

Challenging Pool Fire Risks

Bob Alvarez, IPS

Dr. Gordon Thompson, IRSS

Challenging the Nuke Waste Con Game

Diane Curran, Esq.

Geoff Fettus

NRDC


STOP
NUCLEAR TERROR
NO
NO
NO
NO
NO
NO

DOE's "Consent-Based Siting"

Mobile Chernobyl

Floating Fukushimas

Best Congress Money Can Buy

Energy and Commerce Committee Chairman Fred Upton (R-MI)

Environment and the Economy Subcommittee Chairman John Shimkus (R-IL)

Yucca dump v. Parking lot dumps

U.S. Sen. Lamar Alexander (R-TN)

U.S. Sen. Dianne Feinstein (D-CA)

Environmental Injustice/ Radioactive Racism

Grace Thorpe, Sac and Fox, OK

Margene Bullcreek, Skull Valley Goshutes, UT

Western Shoshone National Council

Corbin Harney and Raymond Yowell

Ian Zabarte, Foreign Minister; Native Community Action Council

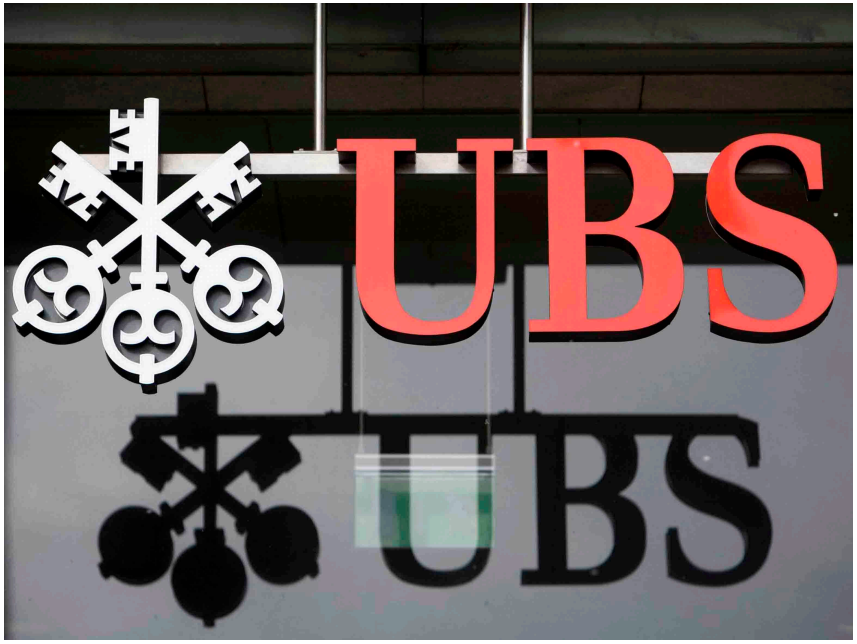
Winona “No Nukes” LaDuke

Tim Judson, NIRS:

"Looks to me like the prices in the contract are structured like those for Ginna and Nine Mile Point. There is base price that is adjusted by monthly and time-of-day factors. The adjustment factors average out to about 1.10 over the whole year. So the average price Entergy will be paid for Palisades' power this year is 1.10 x $52.50/MWh = $57.75/MWh. ***That is by far the highest price PPA I've seen*** (I guess we knew that much). But if Palisades is losing money at that price that means to break-even, the operating cost has to be at least $60/MWh. Entergy cuts so many costs at their reactors, that means ***something is seriously out of whack (which we knew).***"

Follow the Money

UBS



Dr. Mark Cooper, VT Law School

UBS

- **UBS: Industry plans to brings N-costs back to 2002 level, while iffy, would help**
- http://www.electricitypolicy.com/News/ubs-industry-plans-to-brings-n-costs-back-to-2002-level-while-iffy-would-help
- UBS reported to clients last week on its latest conference call with the Nuclear Energy Institute to discuss the latest industry plan to bring costs back down to the 2002 level of $28/MWh by 2020, leveraging reductions on capital expenditures (capex), O&M, and nuclear fuel. UBS characterized the goals as aggressive, which many investors view with "justifiable skepticism." It noted that capex of almost ~$11B in 2012 could be high, as many plants were transitioning from 40- to 60-year timeframes and upgrading pricy steam generators and reactor vessel heads. O&M, it said, remains an area for significant improvement. It opined that declining nuclear costs will be a key upside driver for the likes of Exelon, PSEG, Entergy, NRG, and Talen, among others. A declining cost trend would benefit regulated portfolios as well, including Dominion, Duke Energy, NextEra, Southern, and SCANA. **The bank analysts also focused on Michigan, where Palisades, Entergy's remaining—and costly—single-unit plant, "continues to run with an above-market contract (in the 40's/MWh) with Consumers Energy. It said closing the unit early could save money for Entergy and also for CMS consumers."** With power prices across much of the country "now trending below $30/MWh—and capacity contributing an additional $5-10/MWh," it said the implicit value of carbon "remains the key 'discrepancy' in justifying the economics of these plants." April 15, 2016