

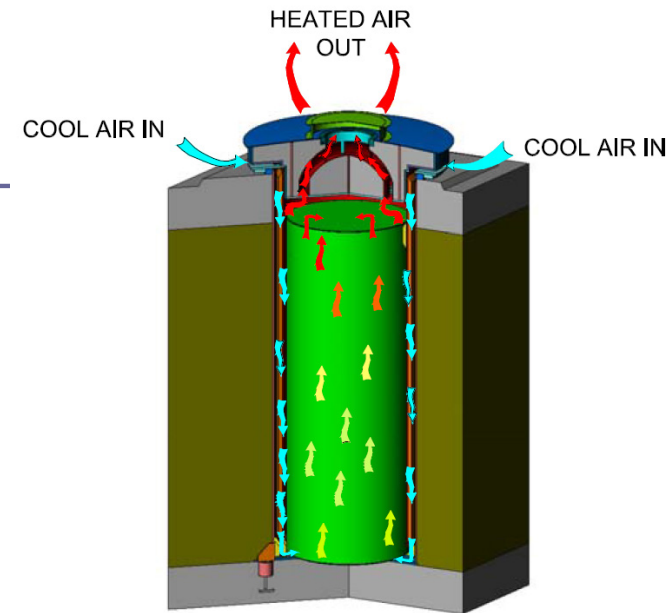
**Waste storage alternatives  
exist now that meet Coastal  
Act requirements**

SOS

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**Long Beach, CA Oct 6, 2015**

# Holtec UMAX unproven

- **San Onofre design not licensed**
- **Humboldt Bay uses thick casks**
- **Thin canisters can crack & leak**
- **Can't inspect, repair, maintain or monitor**
  - **Don't accept promises of future solutions -- vaporware**
- **Holtec president: Repairs cause corrosion**
- **Holtec warranty shorter than Coastal permit**
  - **10 year for underground structure**
  - **25 years for thin 5/8" thick canisters**
  - **2 years for existing San Onofre canisters**



# German interim storage over 40 years



Transport and storage  
casks in the interim  
storage facility of  
Gorleben

Photo: GNS

# Fukushima thick casks in building



# Evidence for potential leaks in coastal environment

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- **Diablo Canyon proven to have conditions for cracking in two-year old canister**
- **Koeberg Nuclear Plant similar component leaked in 17 years**
- **NRC ignores aging issues in 20 year license**

# Thick Casks meet Coastal Requirements

Safety Features	Thin canisters	Thick casks
Thick walls	1/2" to 5/8"	Up to 20"
Won't crack		✓
Ability to repair, replace seals		✓
Ability to inspect		✓
Early warning monitor		✓
ASME <b>container</b> certification		✓
Defense in depth (redundancy)		✓
Stored in concrete building		✓
Gamma & neutron protection	With concrete overpack	✓
Transportable w/o add'l cask		✓
Market leader	<b>U.S.</b>	<b>World</b>



CASTOR® - Type V/19 cask

# Not addressed in CC report

	<b>Loaded</b>	<b>May leak*</b>
■ <b>San Onofre</b>	<b>2003</b>	<b>8 years</b>
■ <b>Rancho Seco</b>	<b>2001</b>	<b>6 years</b>
■ <b>Humboldt Bay</b>	<b>2008</b>	<b>13 years</b>
■ <b>Diablo Canyon</b>	<b>2009</b>	<b>14 years</b>
■ <b>Most U.S. thin canisters in use less than 20 years**</b>		
■ Earliest: 1989 (Robinson, H.B., SC), 1990 (Oconee, SC), 1993 (Calvert Cliffs, MD)		

\* Assumes failure no earlier than 20 years

\*\* Failure Modes and Effects Analysis (FMEA) of Welded Stainless Steel Canisters for Dry Cask Storage Systems, EPRI, Final Report, December 2013, Table 2-2

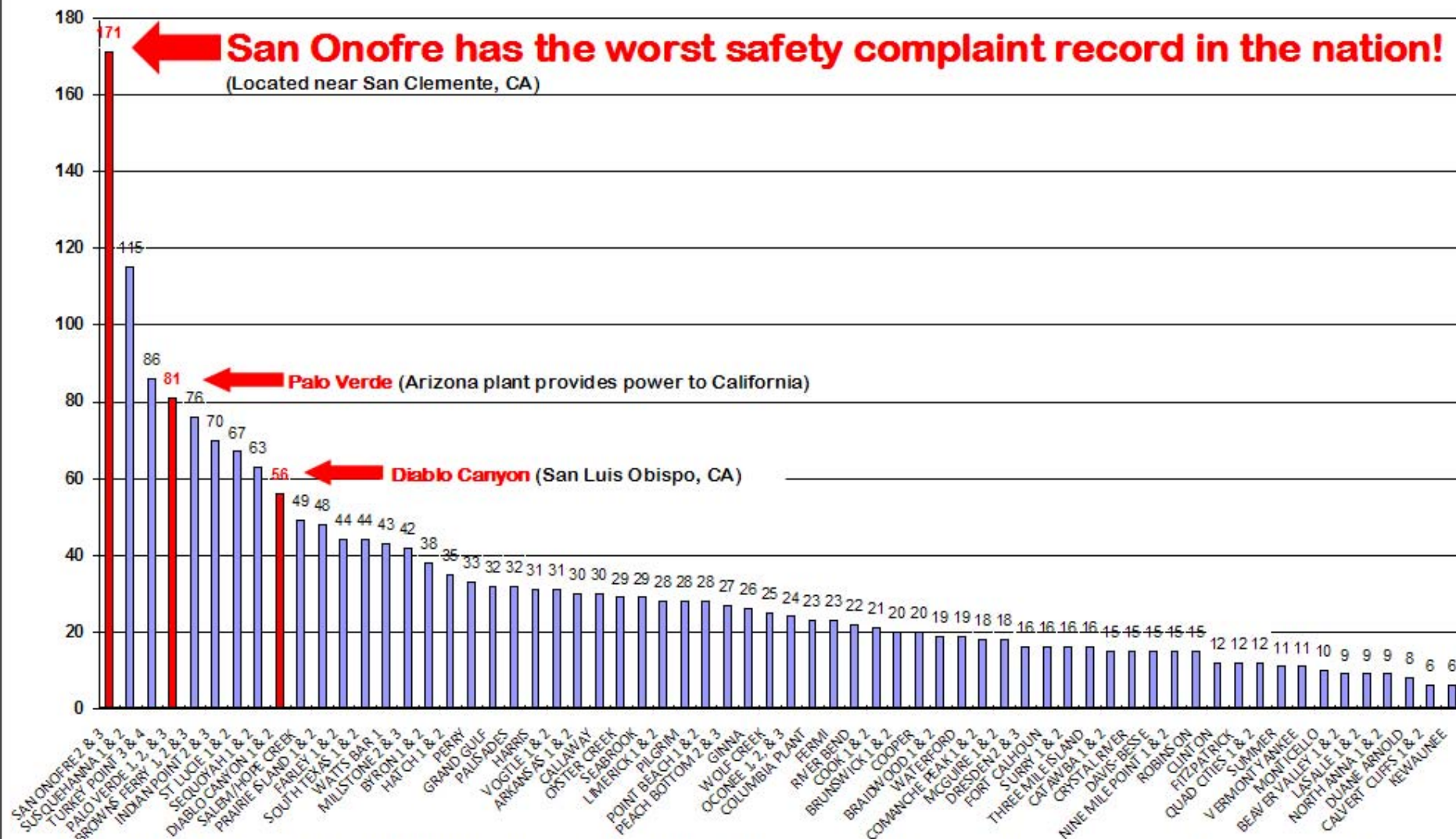
# The TN<sup>®</sup>24 Cask Family

Packaging	Number of fuels	Burn-up (MWd/tU)	Cooling time (years)	Enrichment (%)	Country
TN 24 D	28 PWR	36 000	8	3.4	B
TN 24 DH	28 PWR	55 000	7	4.1	B
TN 24 XL	24 PWR	40 000	8	3.4	B
TN 24 XLH	24 PWR	55 000	7	4.3	B
TN 24 SH	37 PWR	55 000	5	4.25	B
<b>TN 24 G</b>	<b>37 PWR</b>	<b>42 000</b>	<b>10</b>	<b>3.81</b>	<b>CH</b>
TN 24 (F1*)	37 BWR	33 000	4	3.2	J
TN 24 E	21 PWR	65 000	5	4.65	G
TN 32	32 PWR	45 000	7	4.05	US
TN 40	40 PWR	45 000	10	3.85	US
TN 24 P	24 PWR	33 000	5	3.5	US
<b>TN 52 L</b>	<b>52 BWR</b>	<b>55 000</b>	<b>mini 2.5</b>	<b>4.95</b>	<b>CH</b>
TN 24 SWR	61 BWR	70 000	mini 5.5	5.0	G
TN 68	68 BWR	45 000	7	4.4	US
<b>TN 97 L</b>	<b>97 BWR</b>	<b>35 000</b>	<b>10</b>	<b>4.0</b>	<b>CH</b>
<b>TN 24 BH</b>	<b>69 BWR</b>	<b>50 000</b>	<b>6</b>	<b>5.0</b>	<b>CH</b>
TN 24 (F1*)	52 BWR	33 000	4	3.2	J
TK 69	69 BWR	40 000	10	3.2	J
TN 24 ER	32 BWR (Th)	13 700	40	5.2	I

TN INTERNATIONAL



## Safety Complaints from On-Site Employees & Contractors U.S. Nuclear Power Plants 2007 to 2012 (6 years)



The Nuclear Regulatory Commission (NRC) refers to these complaints as "Allegations from On-Site Sources" (current/former power plant employees/contractors and anonymous allegers). These are reports of impropriety or inadequacy of NRC-related safety or regulatory concerns. One allegation report may contain multiple allegations; however, the NRC counts it as one allegation in these statistics (Note: A concern about a safety-conscious work environment (SCWE) problem at a facility is an important allegation. However, a Notice of Violation cannot be issued, because there is no applicable NRC regulation.) There are 64 U.S. nuclear power plants & 104 reactors. Plants with multiple reactors are noted.

Source: [www.nrc.gov/about-nrc/regulatory/allegations/statistics.htm](http://www.nrc.gov/about-nrc/regulatory/allegations/statistics.htm)

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