

## HOLTEC & SNC-LAVALIN COMPANY PROFILES

### I. Legal Issues History

#### A. Holtec

a. TVA Bribery Conviction & Debarment

A TVA supervisor pleaded guilty in 2007 to a federal charge of failing to disclose the receipt of about \$55,000 in payments from a Holtec contractor in connection with a contract to build a storage facility for spent nuclear fuel at TVA's Browns Ferry Nuclear Plant in Alabama. The TVA debarred Holtec from doing business with it for 60 days. Holtec was also reportedly forced to agree to pay a \$2 million "administrative fee" and to submit to independent monitoring of its operations for twelve months.

b. NJ Tax Fraud Issues

<https://www.wnyc.org/story/huge-tax-break-went-politically-connected-company-new-jersey-despite-red-flags/>

<https://www.propublica.org/article/holtec-international-george-norcross-tax-breaks>

New Jersey awarded a \$260 million "Grow NJ" tax credit from the state's Economic Development Authority (EDA), the second-largest tax break in New Jersey's history. It was put on hold when investigative reporting found Singh's falsely sworn certification in the EDA application claiming Holtec had never been barred from doing business with a state or federal agency

c. Ohio Tax Credits Stripped

<https://www.craigslist.com/scott-suttell-blog/new-jersey-learned-too-late-what-ohio-already-knew-about-holtec-international>

Just weeks before filing its application in New Jersey Ohio stripped Holtec of state tax credits for failing to create the jobs it had promised as part of a tax break program. According to records, none of the 200 jobs Holtec had pledged to bring to Orrville, a small town outside Akron, Ohio, ever materialized - 2019.

#### B. SNC-Lavalin

a. World Bank Debarment

<https://www.cbc.ca/news/canada/snc-lavalin-corruption-fraud-bribery-libya-muhc-1.5010865v>

"In April 2013, [the World Bank] banned SNC-Lavalin and its 100 subsidiaries from bidding on projects funded by the development agency for 10 years, citing company misconduct in Bangladesh, as well as in Cambodia . . . and bribes on projects across Africa and Asia."

<https://business.financialpost.com/commodities/mining/a-hit-to-sncs-reputation-chilean-state-owned-miner-fires-embattled-company-adding-to-its-woes>

"[F]ive multilateral development banks, including the World Bank, and others in Asia, Europe, Africa and the Americas, signed a "cross debarment" agreement, in which they stipulated that an organization debarred by one bank will be sanctioned by the others."

b. Libyan Bribery Convictions

<https://www.cbc.ca/news/canada/montreal/snc-lavalin-trading-court-libya-charges-1.5400542>  
<https://www.nytimes.com/2019/12/18/world/canada/snc-lavalin-guilty-trudeau.html>

SNC-Lavalin pleads guilty to fraud for past work in Libya, will pay \$280M fine and be placed on probation.

Between 2001 and 2011, the company offered Libyan government officials under the Muammar Gaddafi regime bribes worth \$47.7 million to influence decisions and defrauded the Libyan government and other entities of "property, money or valuable security or service" worth approximately \$129.8 million.

<https://www.theglobeandmail.com/canada/article-former-snc-lavalin-executive-sami-bebawi-found-guilty-on-all-five/>

Former executive Sami Bebawi was found guilty in a separate case of paying off foreign officials as he worked to secure contracts for the firm. "A jury in Montreal has found former SNC executive vice-president Sami Bebawi guilty of all five charges he faced, including bribing a foreign public official, fraud and laundering the proceeds of crime."

"Mr. Ben Aissa nurtured with the Gadhafi family. The clan ran the country like a mafia-style kleptocracy"

<https://www.theglobeandmail.com/opinion/article-us-should-follow-canadas-lead-on-white-collar-crime-enforcement/>

"[A]s The Globe and Mail's reporting on the firm's extensive lobbying shows. SNC-Lavalin warned at one point that thousands of jobs would be lost if the company were prosecuted. Without a settlement deal, it would be subject to a hostile takeover, it warned at another – all meant to signal that prosecution equals economic doom."

c. Mexican Conviction

SNC-Lavalin consultant who worked to get members of the Gaddafi family into Mexico went to prison there under charges of "consorting with organized crime, falsifying documents, and human trafficking"

<https://www.nytimes.com/2019/02/15/world/canada/snc-lavalin-justin-trudeau.html>

Cynthia Vanier "wound up in a Mexican jail, charged with trying to smuggle the dictator's son into that country" and served 18 months.

d. Montreal Bridge Conviction

<https://www.theglobeandmail.com/canada/article-snc-lavalin-faces-possible-new-criminal-charges-over-montreal-bridge/>

Canadian federal official pled guilty in 2017 for accepting more than \$2.3 million in payments from SNC-Lavalin in connection with the Montreal bridge project, and court documents laid out a \$127 million bribery scheme

e. McGill University Hospital  
Convictions

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

“SNC-Lavalin executives allegedly paid a USD 22.5 million bribe to the former CEO of McGill University Health Centre (“MUHC”), state-funded hospital, Arthur Porter and his wife, Pamela Porter in exchange for obtaining the USD 1.4 billion contract to build the new McGill superhospital.

Weeks following the announcement of SNC-Lavalin's award of the MUHC contract, Sierra Asset Management (“Sierra Asset”), Arthur Porter's shell company, allegedly received bribe from SNC-Lavalin. Sierra Asset then allegedly transferred the money to Regent Hamilton, a shell company registered in the Bahamas under Pamela Porter's name. Neither of the shell companies allegedly have had any known business transactions. The money allegedly funded purchase of eight homes, several purchased for more than USD 1 million.”

“On 18 December 2014, Pamela Porter pleaded guilty to two counts of money laundering . . . she was sentenced to 33 months, minus time served, with additional year of probation and 240 hours of community service.”

“In July 2015, Arthur Porter died in Panama while still fighting extradition to Canada.”

<https://www.theglobeandmail.com/canada/article-former-snc-lavalin-ceo-pleads-guilty-in-fraud-case/>

“Former SNC chief executive Pierre Duhaime was sentenced to serve 20 months of house arrest [in 2019] after pleading guilty to lesser breach of trust charges for his role in the McGill University Health Centre bribery scandal” a criminal investigation into fraud and corruption for \$1.3 billion contract to design, build and maintain the McGill University Health Centre's Glen Site.

<https://www.theglobeandmail.com/canada/article-former-mcgill-hospital-manager-pleads-guilty-in-snc-lavalin-bribery-2/>

“A former manager at the McGill University Health Centre pleaded guilty Monday to accepting a \$10-million bribe in return for helping engineering firm SNC-Lavalin win the contract to build a major Montreal hospital and research centre.”

f. Chilean Contract Terminations

<https://business.financialpost.com/commodities/mining/a-hit-to-sncs-reputation-chilean-state-owned-miner-fires-embattled-company-adding-to-its-woes>

In March 2019, Chilean state-owned copper miner Codelco “fired SNC from a \$350-million contract to build two sulphuric acid plants, citing construction delays and quality issues.”

“It marks a third front on which the giant engineering and construction company has gotten crosswise with a government entity, in addition to Canada and Saudi Arabia.”

“Having a contract terminated by the world's largest copper miner is a clearly a hit to SNC's reputation within the mining industry”

g. Switzerland Plea Deal

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

Swiss authorities detained Riadh Ben Aïssa's who had served as manager of construction at SNC-Lavalin, "as they sought to learn the destination of USD 139 million in funds deposited by SNC-Lavalin into accounts at a private bank, EFG, in Geneva." Mr. Ben Aïssa agreed to a deal with Swiss prosecutors. He had been in prison in Switzerland for 29 months.

A Swiss attorney associated with Ben Aïssa "was charged with money laundering and corruption for having set up two companies (Dinova and Duvel Securities) in the British Virgin Islands, which were involved in the money transfers."

Swiss authorities also investigated an SNC-Lavalin agent named Farid Bedjaoui regarding contracts with Sonatrach (Algeria's state-owned oil company). He is alleged to have made approximately USD 200 million worth of questionable payments on behalf of a number of energy companies.

h. Bridge in Bangladesh

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

SNC Lavalin employees, including Kevin Wallace, former President of the Company's wholly owned subsidiary Candu Energy Inc, offered bribes to Bangladeshi government officials in order to win the Padma Bridge Project.

i. Indian Hydroelectric Projects

<https://www.globalresearch.ca/snc-lavalin-scandal/5670443>

"In 2006 SNC was bailed out by the Canadian aid agency after it didn't [follow proper](#) procedure for a contract to renovate and modernize the Pallivasal, Sengulam and Panniyar hydroelectric projects in the southern Indian state of Kerala."

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

The company paid bribes to the Communist Party of India-Marxist's Kerala Secretary Pinarayi Vijayan and other officials

<https://www.newindianexpress.com/states/kerala/2017/aug/23/here-is-the-full-timeline-of-snc-lavalin-case-involving-kerala-cm-pinarayi-vijayan-1647133.html>

"Pinarayi Vijayan, while serving as electricity minister from May 1996 to October 1998, along with other accused, colluded to award the supply contract for the renovation and modernization of the Pallivasal, Sengulam, and Panniar hydroelectric projects to Canada's SNC-Lavalin, bringing a huge loss to the exchequer."

Reports say the contracts resulted in an alleged loss of 62 million U.S. dollars to the Indian exchequer.

j. 1,800 Lawsuits Regarding  
Faulty Concrete

<https://nationalpost.com/pmnl/news-pmnl/canada-news-pmnl/owners-of-pyrrhotite-damaged-quebec-demand-money-from-snc-lavalin-settlement>

SNC-Lavalin has been sued by 800 homeowners and another lawsuit has been announced regarding damages from faulty concrete. Another 1,000 will be included in suits that are being planned “In 2014, the Quebec Superior Court ruled that SNC-Lavalin was 70 per cent responsible”

(See section II.B below)

k. Canadian Ethics Scandal

<https://www.nytimes.com/2019/08/16/world/canada/trudeau-snc-ethics.html>

Ethics commissioner Mario Dion found Prime Minister Trudeau violated the Conflict of Interest Act when he tried to pressure Canada’s Minister of Justice and Attorney General, Jody Wilson-Raybould to overrule a federal prosecutor’s decision to send SNC-Lavalin to trial on corruption charges. She refused and, after four months, she was demoted to veteran affairs minister. If convicted of the charges, SNC-Lavalin could face a decade-long ban from competing for federal government contracts. The scandal threatened to bring down the Trudeau government which narrowly won reelection in 2019

l. Canadian Political  
Contributions

<https://www.theglobeandmail.com/canada/article-former-snc-lavalin-executive-normand-morin-faces-elections-charges/>

“In 2016, the Liberal and Conservative parties were forced to reimburse the government \$117,803 for illegal donations they received from SNC-Lavalin’s political slush fund.”

A former SNC-Lavalin executive was charged with soliciting employees to make the contributions, conceal their identities, and then get reimbursed by the company through ‘false refunds for personal expenses or payment of fictitious bonuses.’

<https://www.theglobeandmail.com/business/commentary/article-hubris-drove-boeing-to-its-annus-horribilis/>

“Excessive dependence on governments – for contracts, financial help or political favours – is a high-stakes game. It *causes companies to look for the easy way out rather than fessing up to mistakes and focusing on business fundamentals.*

SNC-Lavalin Group – are you listening?”

#### m. Culture of Corruption

<https://www.globalresearch.ca/snc-lavalin-scandal/5670443>

In 1991, Bernard Lamarre former head of Lavalin (now SNC Lavalin), told *Maclean's* that he always demanded a receipt when paying international bribes. “I [make](#) sure we get a signed invoice,” he said. “And payment is always in the form of a cheque, not cash, so we can claim it on our income tax!”

<https://www.theglobeandmail.com/canada/article-former-snc-lavalin-executive-normand-morin-faces-elections-charges/>

“Montreal-based SNC-Lavalin has been engulfed in corruption and bribery scandals reaching back about 14 years amid allegations company executives paid cash to gain advantage with public officials to win billions of dollars in engineering and construction contracts in Canada and around the world.”

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

Police in Canada “charged Mr. Kyres, a prominent lawyer who formerly headed the tax practice at the Montreal office of Dentons Canada LPP, for an alleged plot against a potential witness in connection with the SNC-Lavalin probe. Mr. Kyres was charged with extortion and obstruction of justice”

[https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename\\_searchresult&type=1](https://www.traceinternational.org/TraceCompendium/Detail/260?class=casename_searchresult&type=1)

“SNC-Lavalin allegedly used ‘a secret internal accounting code’ to pay bribes in 13 projects in 10 countries from 2008 to 2011. . . The countries where this allegedly occurred are Ghana, Nigeria, Malawi, Mozambique, Uganda, Zambia, Kazakhstan, India, Bangladesh, and Cambodia.”

<https://www.globalresearch.ca/snc-lavalin-scandal/5670443>

“the firm had either been found guilty or was alleged to have greased palms in Libya, Bangladesh, Algeria, India, Kazakhstan, Tunisia, Angola, Nigeria, Mozambique, Ghana, Malawi, Uganda, Cambodia and Zambia (as well as Québec). A 2013 *CBC/Globe and Mail* investigation of a small Oakville, Ontario, based division of SNC uncovered suspicious payments to government officials in connection with [13 international](#) development projects. In each case between five and 10 per cent of costs were recorded as “‘[project](#) consultancy cost,’ sometimes ‘project commercial cost,’ but [the] real fact is the intention is [a] bribe,” a former SNC engineer, Mohammad Ismail, told the CBC.”

#### n. Possible Consequences in Other Countries

<https://business.financialpost.com/commodities/mining/a-hit-to-sncs-reputation-chilean-state-owned-miner-fires-embattled-company-adding-to-its-woes>

“There will be a wide range of approaches that different governments take, but there will undoubtedly be some governments for which a conviction or perhaps even a deferred prosecution agreement could disqualify a company”

## II. Qualifications Issues: Other Work Experience

### A. Holtec

#### a. San Onofre Waste Problems

<https://www.counterpunch.org/2019/06/07/halting-holtec-a-challenge-for-nuclear-safety-advocates/>

At the San Onofre Nuclear Generating Station (SONGS) in southern California, Holtec is contracted to transfer spent fuel into dry storage. A whistleblower revealed a near miss as a 50+ ton Holtec canister was being loaded into an 18-foot concrete silo. It got stuck on a shield ring near the top of the vault and workers didn't realize the slings supporting the canister went slack. It hung there unsupported for close to an hour, in danger of dropping. Holtec's Hi-Storm UMAX system canisters at SONGS are thicker than the ones workers had practiced loading. Thicker canisters mean a tighter fit and less room going into the silos.

"[T]he Nuclear Regulatory Commission (NRC) fined Southern California Edison an unprecedented \$116,000 for failing to report the near drop . . . delaying giving the go-ahead to further loading operations"

In 2018 workers were preparing a Holtec canister for loading discovered a loose, stainless-steel bolt inside, about four inches long. An investigation revealed that Holtec had altered the canister design without permission from the NRC. The NRC called the unauthorized changes "safety significant."

#### b. Pilgrim Nuclear Plant Issues in Massachusetts

Attorney General Maura Healey's office filed suit in federal court against the NRC to challenge the decision to approve the sale of the Pilgrim Nuclear Power Station ("Pilgrim") to Holtec. The NRC approved a regulatory exemption Holtec had requested to be allowed to use \$541 million of the \$1.1 billion decommissioning trust fund for spent fuel work that is normally not covered as a decommissioning expense. (see below)

Holtec would be allowed to reimburse itself in advance from the decommissioning fund for what it spends on spent fuel management, then sue the Department of Energy for breach of contract to recover that money, in effect getting paid for twice for the same work. NRC staff confirmed that any funds Holtec recovers from DoE would not go back into the decommissioning trust fund, but to Holtec.

AG Healy also pointed out that Holtec set aside only a very small portion of the decommissioning fund for contingencies.

US Senator Edward Markey also weighed in, saying Holtec's math on how it will pay for decommissioning does not add up

c. Industry Reputation

Holtec has never completed a nuclear plant decommissioning project. Its entire nuclear ‘fleet’ was acquired less than a year ago.

<https://www.claimsjournal.com/news/national/2019/05/22/291057.htm>

In legal briefs filed with the NRC, Massachusetts officials including Attorney General Maura Healey have expressed skepticism about Holtec’s plan to “decommission Pilgrim on an expedited schedule never before achieved,” despite having never owned a nuclear plant nor managed a decommissioning start to finish.

Holtec was not represented at the industry’s 2019 Decommissioning and Waster Forum in Charlotte, NC. Many other industry representatives at that Forum were very critical of the company. (comments made to journalists Peter Wolf and ‘Profile’ author Nancy Vann who attended the Forum)

## B. SNC-Lavalin

a. Financial Losses

<https://www.theglobeandmail.com/canada/article-evening-update-ottawa-responds-to-drug-shortage-fears-snc-lavalin/>

In 2019 “**SNC-Lavalin slashes dividend as it reports \$2.1-billion quarterly loss**

SNC-Lavalin is cutting its quarterly dividend for the second time this year to \$0.02 per share from \$0.10 as it moves to pay down debt and strengthen its balance sheet, the Montreal-based company said in its second- quarter earnings release Thursday. The company swung to a \$2.1-billion loss for its latest quarter. It has also mandated a new manager reporting directly to its chief executive officer to oversee the closing out of 11 big lump-sum turnkey contracts over the next several years.”

“The company has lost about half its market capitalization since January and its stock is plumbing lows last seen 14 years ago.”

<https://business.financialpost.com/commodities/snc-lavalin-ceo-neil-bruce-in-the-spotlight-as-reputational-hits-keep-coming-for-embattled-company>

“In February [2019], Standard & Poors downgraded SNC to BBB-, and now, along with another credit ratings agency, DBRS, it has confirmed SNC’s BBB credit rating, the bottom tier of investment grade.”

<https://business.financialpost.com/news/fp-street/snc-lavalin-cut-to-junk-on-heightened-credit-risk-profile>

**SNC-Lavalin rating cut to junk on heightened credit-risk profile**

S&P cut the Montreal-based company by one level to BB+, the highest **non-investment grade** rating, according to a statement Monday.

b. Exiting 15 Countries

<https://www.reuters.com/article/us-snc-lavalin-results/snc-lavalin-to-exit-15-countries-main-unit-posts-surprise-loss-idUSKCN1S8116>

SNC-Lavalin to exit 15 countries.

“We believe that there’s at least C\$5 to C\$6 billion worth of contracts to date that we are privy to that we lost out on because of our competitors using (corruption charges) as a negative,” Chief Executive Officer Neil Bruce said”

c. Abandoning Construction Agreements

<https://www.on-sitemag.com/features/from-the-editor-snc-lavalin-retreats-from-construction-but-dont-expect-a-bonanza/>

“An expansion of Vancouver’s SkyTrain is one of several projects SNC-Lavalin has pulled out of.”

“[I]t will pull out of the procurement processes for several high-profile jobs, such as Vancouver’s Broadway subway extension project and Montreal’s Louis-Hippolyte Lafontaine tunnel rebuild.”

“With the bulk of the firm’s workforce dedicated to engineering, “most” of the construction scope of projects has been subcontracted. While this is nothing novel in construction, SNC-Lavalin has taken the practice further than most.”

“As SNC-Lavalin exits the construction stage complaining about high risks, Canada’s contractors simply need to continue doing what they’ve always done, taking the risks in stride and out-executing their Montreal-based rival.”

<https://www.reuters.com/article/us-snc-lavalin-results/snc-lavalin-to-exit-15-countries-main-unit-posts-surprise-loss-idUSKCN1S8116>

“SNC also said a previously announced deal to sell a 10.01 percent stake in 407 International Inc for C\$3.25 billion may fall through as one of the shareholders of the Ontario toll operator has indicated it may oppose.

If the deal is blocked, the company will have to pay a breakup fee of 2.5 percent of the deal value, and at least one analyst cautioned that this could push up the company’s costs for the year.”

<https://business.financialpost.com/news/fp-street/iconic-investor-stephen-jarislowsky-calls-for-vote-on-sncs-407-sale>

“the value of SNC’s 16.5 per cent holding in the 407 toll road’s assets represented about 80 per cent of the engineering and construction company’s market valuation at the time of the announced sale.”

d. Faulty Concrete Problems

<https://nationalpost.com/pmn/news-pmn/canada-news-pmn/owners-of-pyrrhotite-damaged-quebec-demand-money-from-snc-lavalin-settlement>

Hundreds of homes around Trois-Rivieres, Quebec, Canada, were damaged after they were built with low-quality concrete that contained pyrrhotite, which expands when it comes into contact with water and air.

“In 2014, the Quebec Superior Court ruled that SNC-Lavalin was 70 per cent responsible for the damage because one of the company’s geologists produced a report stating the concrete was fit for use.”

It’s estimated that more than 1,800 homes have been damaged. “[L]egal experts have estimated the average damage to each property is just under \$200,000.” (See §I.B.j. above)

e. Canadian Nuclear Work

SNC-Lavalin is part of a consortium to clean up Canada’s radioactive waste, as well as all federally owned nuclear facilities. The consortium is paid about a billion dollars in public money each year.

In that role it attracted the opposition of 140 municipalities, NGOs and nuclear experts for its plan to permanently store a million cubic meters of mixed radioactive wastes on the surface next to the Ottawa River at Chalk River National Labs. Opponents of the proposal include former senior Chalk River scientists

### III. Elusive Corporate Organizational Structures

#### A. Holtec

a. Holtec International (HI)

Privately held company founded by CEO Krishna Singh – no public financial disclosure

Owned by its shareholders: (i) The Great Banyan Trust, 36.33% ownership interest; and (ii) Multi-Decades Trust, 63.67% ownership interest. These trusts are controlled by CEO Singh<sup>1</sup>

Operation centers in the US, Brazil, Dubai, India, South Africa, Spain, UK and Ukraine

b. Holtec Decommissioning International (HDI)

Wholly owned indirect subsidiary of Holtec International<sup>1</sup>

“Formed by Holtec to operate and decommission all Holtec-owned decommissioning nuclear power plant sites”<sup>1</sup>

Functions as the licensed operator for Holtec owned nuclear power plants

c. Nuclear Consultants International, LLC (NCI)

Nuclear Consultants International, LLC (NCI) is an autonomously constituted business unit of Holtec International.

NCI’s principal area of concentration is oversight of decommissioning projects to ensure their regulatory and safety. NCI advises the plant owner on licensee requirements and provides oversight activities that meet owner requirements. NCI serves as an agent of the plant owner.

d. Holtec Power, Inc. (HPI)	Subsidiary of Holtec International (HI) Parent of Nuclear Asset Management Company, LLC Parent of Holtec Decommissioning International, LLC (HDI)
e. Nuclear Asset Management Company, LLC (NAMCo)	Indirect Subsidiary of HI through Holtec Power, Inc. (HPI) Parent of Holtec Indian Point 2, LLC and Holtec Indian Point 3, LLC
f. SMR-160, LLC	Based in Camden, NJ, is a wholly owned subsidiary of Holtec International (United States) (See 'Joint Ventures' below)
g. Ukrainian Module Consortium	<a href="https://holtecinternational.com/company/divisions/ukrainian-module-consortium/">https://holtecinternational.com/company/divisions/ukrainian-module-consortium/</a> "On June 10, 2019, Holtec, Energoatom and SSTC entered into a Trilateral Consortium Partnership to advance the SMR-160 nuclear reactor for deployment across Ukraine. The Consortium's technology operation center is based in Kiev, Ukraine."
h. Holtec Orrvilon Limited	Private company organized in Hong Kong. Ownership structure is undetermined.
i. Orrvilon, Inc.	Aluminum systems, structures, and components, designing, welding, and engineering services facility located in Orrville, OH
j. HI-STORE Consolidated Interim Storage Facility	Holtec has applied to the Nuclear Regulatory Commission for a construction and operating permit, to transport 173,600 metric tons of commercial irradiated nuclear fuel to New Mexico for so-called Consolidated Interim Storage (CIS). (See 'Issues Regarding Other Lines of Business' below)
k. Holtec Government Services	
l. Holtec Asia Private Limited	
m. Holtec Africa	
n. Holtec Manufacturing Division	
o. HI-POWER Division	
p. Nuclear Power Division	
q. Heat Transfer Division	

r. Singh Center for  
Nanotechnology

## **B. SNC-Lavalin**

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|--|---|
| a. SNC-Lavalin Group Inc.                                | A Canadian company based in Montreal  |
| b. SNC-Lavalin Inc.                                      | A wholly owned subsidiary of SNC-Lavalin Group, Inc.  |
| c. SNC-Lavalin International Inc.                        | A wholly owned subsidiary of SNC-Lavalin Group, Inc.  |
| d. SNC-Lavalin Europe S.A.S.                             | A wholly owned subsidiary of SNC-Lavalin - headquartered in France  |
| e. Kentz USA   | A subsidiary of SNC-Lavalin <sup>1</sup>  |
| f. Atkins Energy, Inc.                                   | A subsidiary of SNC-Lavalin <sup>1</sup><br>Based in Columbia, South Carolina   |
| g. Candu Energy Inc.                                     | A wholly owned subsidiary of SNC-Lavalin Group, Inc. - reactor technology and supports plants throughout the world<br><br>Candu Energy Inc. was created in 2011 when parent company SNC-Lavalin purchased the commercial reactor division of Atomic Energy of Canada Limited (AECL), along with the development and marketing rights to CANDU reactor technology. |
| h. SNC-Lavalin Rail & Transit<br>(Formerly 'Interfleet') | SNC-Lavalin subsidiary in Derby, England  |

## **C. Joint Ventures**

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|--|--|
| a. Comprehensive<br>Decommissioning International<br>LLC (CDI) | Holtec (through HDI) and SNC-Lavalin (through Kentz USA) jointly owned decommissioning general contractor<br><br>Actual work is being performed by this joint-venture entity under contractual agreement<br><br>Conflict of interest as buyer of Holtec dry storage containers, etc.   |
| b. SMR 160 Reactor Project                                     | <a href="https://smrllc.com/2017/07/24/snc-lavalin-and-holtec-formalize-agreement-to-accelerate-the-development-of-smr-160-small-modular-reactor/">https://smrllc.com/2017/07/24/snc-lavalin-and-holtec-formalize-agreement-to-accelerate-the-development-of-smr-160-small-modular-reactor/</a><br><br>"SNC-Lavalin and Holtec Formalize Agreement to Accelerate the Development of SMR-160 Small Modular Reactor" |

## D. Subsidiaries Created for Indian Point

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|---|--|
| a. IPEC Independent Spent Fuel Storage Installation (ISFSI) | Current Entergy Dry Storage Facility <sup>1</sup> - IPEC Independent Spent Fuel Storage Installation (ISFSI)<br>It is unclear exactly which Holtec entity will own the ISFSI |
| b. IP1 & IP2 – Holtec Indian Point 2, LLC                   | Indirect Subsidiary of HI through HPI and NAMCo<br>No independent capital, no loans or guarantees from ‘parent’ companies.   |
| c. IP3 – Holtec Indian Point 3, LLC                         | Indirect Subsidiary of HI through HPI and NAMCo<br>No independent capital, no loans or guarantees from ‘parent’ companies.   |

## E. Organizational Structure Issues

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|----------------------------|--|
| a. Lack of Working Capital | <p><a href="https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19326B953v">https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19326B953v</a></p> <p>None of the subsidiaries have any independent capital. Their only asset is the Decommissioning Trust Fund (DTF). There are no loans from the ‘parent’ corporations either.</p> <p>That leads to the <b><i>exemption request to use the DTF money for waste management work.</i></b></p> <p>This is <b>not</b> the way that operation nuclear plants pay for waste management. Operating plants pay for the waste management work out of their own funds and then are reimbursed by the Department of Energy (DOE). This creates a risk that the DTF will run out of money leaving State and local government on the hook.</p>  |
| b. Shell Corporation Risks | <p>Bankruptcy risk - <a href="https://www.law.nyu.edu/sites/default/files/19-02.20%20-%20NRC%20Petition%20to%20Intervene.pdf">https://www.law.nyu.edu/sites/default/files/19-02.20%20-%20NRC%20Petition%20to%20Intervene.pdf</a></p> <p>The Massachusetts Attorney General had this to say regarding similar structures created by Holtec for the Pilgrim plant decommissioning:</p> <p>“The financial and attendant safety, health, and environmental risks associated with the [license transfer to Holtec] are further increased by the corporate structure of the proposed transferee and new site operators. Holtec Decommissioning International and Holtec Pilgrim, the proposed licensee and new site operator, respectively, are both structured as Limited Liability Companies (“LLCs”). . . This raises a significant risk that the owner and operator could at some point have liabilities that outstrip their assets and could therefore choose to file for bankruptcy before site decontamination and restoration are complete.”</p> |

c. No Parent Company Commitments

<https://www.law.nyu.edu/sites/default/files/19-02.20%20-%20NRC%20Petition%20to%20Intervene.pdf>

“Nor can anyone necessarily assume that Holtec can obtain additional funds from a parent company because, as the NRC has said previously, a “parent company is not an NRC licensee” and the “NRC does not have the authority to require a parent company to pay for the decommissioning expenses of its subsidiary-licensee, except to the extent the parent may voluntarily provide” a parent company guarantee.”

## IV. Holtec Decommissioning Proposal Issues

### A. Entergy & Holtec’s NRC Filings

<https://www.nrc.gov/docs/ml1932/ML19326B953.pdf>

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19354A698>

Entergy Nuclear Operations, Inc. (“Entergy”) filed a license transfer application (“LTA”) (Accession No. ML19326B953) on November 21, 2019 and Holtec filed a ‘Post-Shutdown Decommissioning Activities Report’ (“PSDAR”) and site-specific decommissioning cost estimate (“DCE”) with the NRC on December 19, 2019 (ML19354A698)

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML20026A002>

By letter dated February 10, 2020, the NRC informed Holtec that the PSDAR did not conform to regulatory requirements since Holtec was not the licensee for Indian Point. The NRC will treat that document as a supplement to the LTA. However, this document will continue to refer to it as the PSDAR since that is the title shown on the NRC’s ADAMS document website.

### B. Ubiquitous Exemptions

a. General Legal Standards for Granting Exemptions

<https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.html>

From NRC Website Fact Sheet Backgrounder on Decommissioning Nuclear Power Plants – Phases of Decommissioning – 1) Transition from Operation to Decommissioning:

“Other requirements are currently eased through exemptions and license amendments; several of these transitional changes will be included in the new regulations under development.”

b. Holtec Applications for  
Decommissioning Trust Fund  
Exemptions

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19326B953>

For Indian Point: “The HDI plan is to fund all spent fuel management costs following license transfer using the NDTs, pursuant to the NRC’s approval of an exemption from 10 CFR 50.82(a)(8)(i)(A), which HDI is submitting separately from this Application”<sup>1</sup>

<https://www.law.nyu.edu/sites/default/files/19-02.20%20-%20NRC%20Petition%20to%20Intervene.pdf>

For Pilgrim: “The proposed action would permit Holtec Pilgrim, LLC and HDI to use funds from the Pilgrim decommissioning trust fund (the Trust) for management of spent fuel and site restoration activities.”

“[W]hen evaluating potential expenses related to the cleanup of other nuclear sites, a decommissioning trust fund shortfall from groundwater contamination is a significant possibility, and a shortfall arising from unexpected spent fuel management expenses is ‘very possible.’”

<https://www.nrc.gov/docs/ML1822/ML18228A498.pdf>

“The exemption from 10 CFR 50.75(h)(1)(iv) would also permit Exelon to make these withdrawals without prior notification of the NRC, similar to withdrawals for decommissioning activities made in accordance with 10 CFR 50.82(a)(8).”

c. Holtec Applications for  
Emergency Planning Exemptions

<https://www.govtech.com/em/disaster/-Pilgrim-Nuclear-Power-Station-to-shrink-emergency-planning-zone.html>

<https://www.capecodtimes.com/news/20190424/pilgrim-seeks-big-cut-in-liability-insurance>

“Despite opposition from the region's legislators and even the Federal Emergency Management Agency [FEMA], the Nuclear Regulatory Commission has voted to allow the owners of Pilgrim Nuclear Power Station to shrink the plant's emergency planning zone from the current 10-mile radius down to its own property line.

“And with that elimination will come the loss of about \$2 million in annual funding for those towns, to be put toward safety training, staffing, equipment and expenses.”

“FEMA and some states dispute the Nuclear Regulatory Commission staff's premise that "all hazards planning" would be enough to address a nuclear accident. Planning experts recommend the planning zone remain in place.”

<https://www.markey.senate.gov/news/press-releases/senator-markey-blasts-nrc-decision-to-exempt-pilgrim-nuclear-power-plant-from-emergency-planning-requirements>

Senator Markey Blasts NRC Decision to Exempt Pilgrim Nuclear Power Plant from Emergency Planning Requirements at Entergy & Holtec's request – November 4, 2019

“Today’s NRC decision means Pilgrim is exempt from regulations that require the maintenance of offsite emergency response capabilities or **procedures for public notification**, even before all of the spent nuclear fuel is moved into dry cask storage. Pilgrim’s nuclear spent radioactive fuel pool was designed to hold 880 fuel assemblies, but today it holds more than 2,300 – more than two and a half times that number.” For Indian Point: See letter dated April 15, 2019

d. Holtec Requests for Faster Spent Fuel Transfer

<https://www.claimsjournal.com/news/national/2019/05/22/291057.htm>

Under federal protocols, spent fuel rods are typically placed in pools filled with water and reinforced with concrete to prevent leakage. Used fuel generally stays in the pool for at least five years, and 10 years is the industry norm, according to the NRC, allowing for enough cooling so it can be safely moved into so-called “dry storage” casks.

Holtec has designed a cask it says can accept spent fuel after only two years, allowing for a complete transfer from the “wet storage” pool within three years.

Holtec has also applied to reduce fuel pool cooling times to **one (1) year!** (See: Attachment 1 to Holtec Letter 5014855 LAR 1014-14 Rev. 0)

e. Holtec Request for Higher Worker Exposure Limits

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19354A698>

On page 30 of the Post-Shutdown Decommissioning Activities Report (PSDAR) Holtec states that “IPEC will be within the range of the cumulative occupational dose estimates for decommissioning PWR plants of 560 - 1,215 person-rem (per reactor).” However, it is requesting an exemption to raise the exposure limits for workers to 3,500 mrem/hour. Experts say that is a very high exposure limit.

<https://www.nrc.gov/about-nrc/radiation/around-us/calculator.html>

The “U.S. Nuclear Regulatory Commission (NRC) has established standards that allow exposures of up to 5,000 mrem per year for those who work with and around radioactive material, and 100 mrem per year for members of the public.”\*

That’s because the “Transfer Casks” Holtec uses to move nuclear waste from the spent fuel cooling pools to dry cask storage have a jacket that is generally filled with water to limit the amount of radiation that escapes. In order to save money, Holtec wants to move the waste without filling the Transfer Cask jackets since that would lighten the total load. However, it would also increase the amount of radiation escaping.

f. Holtec Requests for Insurance Exemptions

<https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/nuclear-insurance.html>

The Price-Anderson Act of 1957 capped nuclear plants’ liability for personal injury and property damage caused by a commercial nuclear power plant accident. Claims resulting from nuclear accidents are covered under Price-Anderson; for that reason, **all U.S. property and liability insurance policies exclude nuclear accidents.**

Owners of nuclear plants pay an annual premium for private insurance for offsite liability for each reactor site. This primary, or first tier, insurance is supplemented by a second tier in case a nuclear accident causes damages in excess of the first tier coverage. A licensee would be assessed a prorated share of the excess, up to \$131.056 million per reactor. This secondary tier of funds contains about \$12.9 billion. If the public liability exceeded the maximum amount of financial protection available from the primary and secondary tiers, each licensee would be assessed a pro rata share of this excess not to exceed 5 percent of the maximum deferred premium of approximately \$6.553 million per reactor.

<https://www.capecodtimes.com/news/20190424/pilgrim-seeks-big-cut-in-liability-insurance>

According to the NRC, Holtec has applied for and been approved for exemptions from NRC’s insurance regulations for two other plants it is decommissioning: Pilgrim and Oyster Creek.

<https://www.federalregister.gov/documents/2020/01/13/2020-00285/holtec-pilgrim-llc-holtec-decommissioning-international-llc-pilgrim-nuclear-power-station>

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML18229A005>

**C. “Captive” Community Advisory Panel**

There are two positions on the Indian Point NDCAP panel for licensee representatives. Only publicly available information will be used. Any money to hire experts would apparently need to be furnished by the company. We need a truly independent oversight body with the authority and resources required to effectively monitor the decommissioning process.

**D. Worker Retention & Conditions**

a. Estimated Worker Retention.

At local informational meetings, Holtec employees have stated that “Incumbent staffing levels will be based on the permanent shutdown and defueled status of the station immediately prior to the license transfer.”

It’s anticipated that the workforce will shrink from about 900 to about 300 by the closing date.

b. Oyster Creek Workers Issue

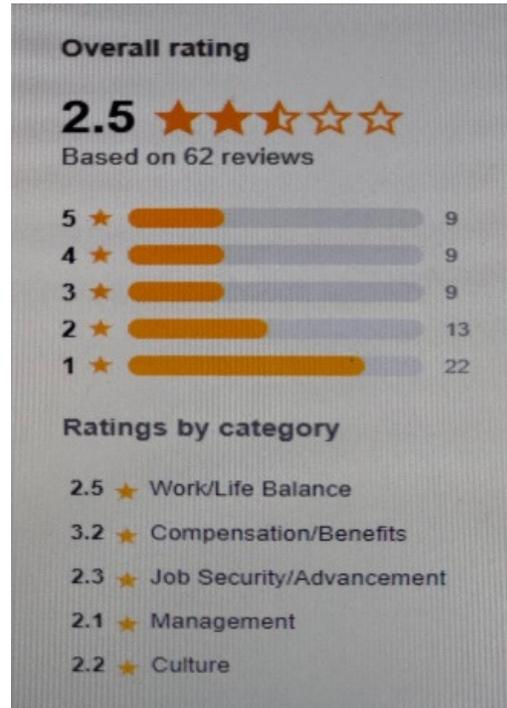
Holtec CEO Singh said in a press release, "Many of the excellent plant staff will join our exceptionally qualified engineers."

But since then, multiple unions have objected to Holtec hiring less expensive, lower-skilled non-union workers to do the decommissioning work

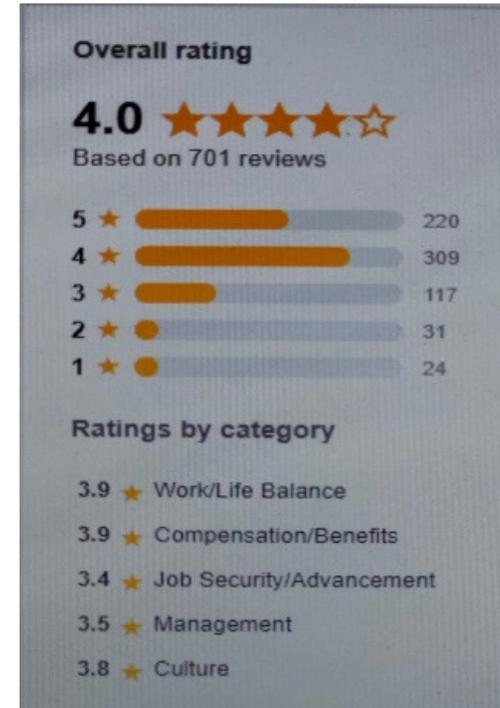
c. Working Conditions

Working conditions at Holtec received a significantly lower score than working conditions for competitor Orano. Accelerated Decommissioning Partners (ADP), a joint venture formed in 2017 between NorthStar Group Services and Orano USA (formerly AREVA Inc.) has decommissioned more than 10 NRC-licensed nuclear reactor and laboratory sites in the U.S.

Holtec - 2.5



Orano - 4.0



d. Racial Issues

<https://www.inquirer.com/philly/blogs/inq-phillydeals/camden-jobs-kris-singh-holtec-joseph-balzano-emr-20180914.html>

“Kris Singh, CEO of Holtec in Camden, raised a ruckus this week when he complained to a local publication how hard it is to find workers in his new city because "they can't stand getting up in the morning" and have "no tradition of work" in their families”

<https://whyy.org/segments/protesters-call-holtec-ceos-comments-on-camden-workers-racist/>

**Protesters call Holtec CEO’s comments on Camden workers ‘racist’**

“They don’t show up to work,” Singh said of Camden workers. “They can’t stand getting up in the morning and coming to work every single day. They haven’t done it, and they didn’t see their parents do it. Of course, some of them get into drugs and things. So, it’s difficult.”

## E. “Cookie Cutter” Approach to Multiple Projects

If Holtec is approved to decommission Indian Point, it would be responsible for decommissioning as many as six reactors at four nuclear plants at the same time, including Pilgrim, Oyster Creek, Palisades Nuclear Generating Station, and the three Indian Point reactors while also managing spent nuclear fuel those plants.

Holtec plans to move crews from plant to plant between the facilities it is trying to decommission. This approach *has never been used* for decommissioning in the US and ignores the basic differences between the plants. Reminder: Holtec has never completed the decommissioning of even *one* plant.

It is very unclear that Holtec has the required resources to take on such a task, including trained and experienced personnel for performing the work and management for multiple projects. Their “cookie cutter” approach means that a delay at one project can cause delays at all of the others – significantly increasing the decommissioning costs.

## F. Unrealistic Timetables

### a. Department of Energy (DOE) Taking Ownership of Waste

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML19354A698>

The Post-Shutdown Decommissioning Activities Report (PSDAR) includes an assumption that the Department of Energy will take ownership of the spent fuel starting in 2031. PSDAR page 37

Under current law the DOE can’t take ownership of the nuclear waste until there is a permanent repository for it. Work has been halted on the only proposed permanent storage facility at Yucca Mountain due to the unsuitability of that damp and geologically unstable location. No new permanent repository has even been proposed.

### b. Removal of All Waste from Site

The PSDAR claims that complete decommissioning of the Independent Spent Fuel Storage Installation (ISFSI), including the removal of spent fuel and Greater Than Class C (GTCC) waste from the site, will be finished by 2062. PSDAR pages 16 & 37

Under current law nuclear waste can’t be moved into any interim storage facility until there is a permanent repository for it. Work has been halted on the only proposed permanent storage facility at Yucca Mountain due to the unsuitability of that damp and geologically unstable location. No new permanent repository has even been proposed.

### c. Waste Management Expense Reimbursement Timing

On page 6 of the PSDAR, Holtec states that: “Use of the [NRC’s] DECON method will require HDI [Holtec] to manage the spent fuel because of the DOE’s failure to perform its contractual obligation to remove spent fuel in a timely manner.”

The use of Decommissioning Trust Fund (DTF) money for waste management is prohibited. However, Holtec anticipates that the NRC will grant it an exemption allowing use of DTF money for waste management. Holtec expects to then be compensated for the waste management expenses by the DOE (as happens every year for *operating* plants). But it does not expect to put those funds back into the DTF.

Use of the DTF for waste management wouldn't be necessary if the entities decommissioning Holtec created had sufficient capital to carry out the work and then be reimbursed by the DOE, as is the normal situation.

This arrangement ignores that: (i) Entergy could complete movement of the nuclear waste into dry storage during Period 2 under PSDAR §2.2 before transferring the license to Holtec and (ii) Holtec could hire a company with adequate capital to complete the waste management work.

## G. Unrealistic Cost Estimates

### a. Assumption that Waste Costs Will Be Transferred to DOE

“The cost to decommission the site, safeguard the spent fuel until it can be transferred to the DOE” PSDAR page 17

The Post-Shutdown Decommissioning Activities Report (PSDAR) includes an assumption that the DOE will take ownership of the spent fuel in 2031. PSDAR page 37. But as stated in §IV.E.a. above, that assumption is at odds with the current laws and regulations.

Spent Fuel Management total costs are estimated to be \$72,381,000 for Unit 1, \$188,278,000 for Unit 2, and \$371,370,000 for unit 3. PSDAR Table 4-1 page 18

### b. No Estimate of Inflation

Page 17 of the PSDAR states that: “Escalation of future decommissioning costs over the remaining decommissioning project life-cycle are excluded.”

In other words, no allowance has been made for any inflation over the 40 or more year period until the estimated license termination.

### c. Cost Estimates vs Work Schedule

The timeline for carrying out specific decommissioning activities doesn't match up with the costs outlined in the PSDAR.

Some examples of this issue are presented in the ‘Declaration of Warren K. Brewer, submitted to the NRC on February 12, 2020.

<https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML20043E121>

He notes that:

“For example, the only work scheduled for 2031 is Unit 1 demolition (see PSDAR Figure 3-1) yet DCE Table 3-4c shows twenty-two full-time-equivalents of craft labor for Unit 3. Given that Unit 3 demolition is scheduled to be completed in 2027, there is no indication as to what this labor would be supporting.

Similarly, site restoration activities on Figure 3-1 are scheduled for 2032 through 2033 yet the decommissioning cash flows in Tables 5-1a, 5-1b, and 5-1c show substantial expenditures for site restoration throughout most of the decommissioning.”

d. Comingling of  
Decommissioning Trust Funds

Although NRC regulations create separate DTF's for each reactor at Indian Point, the PSDAR seems to assume that those funds will be comingled rather than being used for the specific reactors they have been accrued for.

## V. Issues Regarding Other Lines of Business

### A. Holtec Interim Storage Project

Holtec is seeking NRC licenses for an interim storage facility named HI-STOR CISF, located on a 1,000-acre property outside Carlsbad and Hobbs, New Mexico (near the Eddy-Lea county line). It would hold up to 120,000 metric tons of spent nuclear fuel about 40 feet underground in large steel HI-STORM UMAX casks.

The Eddy-Lea Energy Alliance (ELEA), a joint venture with numerous local organizations, owns the surface rights, the New Mexico State Land Office owns the mineral estate beneath the surface in the oil- and gas-rich Permian Basin. Up to 2,500 oil, gas and mineral wells or sites are operated in the area by 54 businesses within a 10-mile radius of the site. Fracking activities can induce significant artificial earthquakes, that can damage CISFs.

The New Mexico State Land Commissioner said that Holtec falsely stated it secured agreements with nearby oil and gas operators to restrict extraction operations near the proposed site and assured the NRC that oil and gas drilling would only occur at depths greater than 5,000 feet. But only one such agreements exists.

<https://www.counterpunch.org/2019/06/07/halting-holtec-a-challenge-for-nuclear-safety-advocates/>:

“In an unusual alliance with environmental groups, extractive industry groups the Texas-based Fasken Land and Minerals Ltd. and Georgia-based NAC International Inc. also filed petitions for a hearing, contending that the nuclear waste storage project threatens lucrative fracking operations in the booming Permian Basin.”

“The project is also widely opposed by Native American Tribes – already victimized by atom bomb testing and uranium mining – as well as ranchers and growers who fear water contamination and the boycotting of their products”

“Rick Perry, Secretary of the U.S. Department of Energy, admitted a few weeks ago to a congressional committee that there is a distinct possibility that ‘interim storage’ sites like Holtec could become permanent, de facto spent nuclear fuel repositories for hundreds of years or even forever”

Suggested viewing: ‘Into Eternity’ Trailer: <https://www.youtube.com/watch?v=GmWadizC8AQ>  
Full video with Spanish sub-titles: <https://www.youtube.com/watch?v=ayLxB9fV2y4> or  
<https://www.youtube.com/watch?v=FrGP87XeJjY>

## B. Casks & Canisters

### a. Radioactive Contents

Each canister has roughly as much highly radioactive Cesium-137 as was released from the 1986 Chernobyl nuclear disaster. Half of all fuel at Indian Point is 'high burnup' fuel that is even more radioactive than older fuel.

### b. Thin Canisters

<https://sanonofresafety.org/holtec-hi-storm-umax-nuclear-waste-dry-storage-system/>

Most nuclear waste in the U.S. is stored in thin-wall steel storage canisters like those used by Holtec. These canisters cannot be inspected (inside or out), maintained or monitored to prevent major radioactive releases.

- There is no aging management designed into these thin canisters.
- They cannot be inspected for cracks
- They cannot be repaired once loaded with spent nuclear fuel waste.
- There are numerous concrete aging management problems
- A similar container at the Koeberg, South Africa failed after 17 years

Holtec manufactures the thin-wall dry-storage canisters for both Indian Point and the San Onofre project. They are welded shut, designed for interim storage, and are not approved for shipment off site. It has been revealed that the Holtec canisters are getting scratched and gouged in the loading process. Watchdog groups say they accelerate corrosion in the moist salt air and could lead to early failure.

The current U.S. thin-wall steel storage canisters may start failing in as little as 17 to 20 years with through-wall cracks. Even microscopic scratches, pits or other corrosion, such as from moist salt air, can trigger cracking. According to NRC metallurgist Darrell Dunn once a crack starts it can grow through the wall in only [16 years](#).

In 2014 Holtec's CEO Kris Singh said publicly he didn't believe it was practical to repair the canisters if they were damaged.

Holtec canisters were the subject of scathing safety reviews by a U.S. quality assurance engineer who was later terminated for suspected whistleblowing. These canisters do not meet ASME requirements for inspection, let alone repair. Only thick-wall casks ([such as the Castor](#)) meet ASME N3 requirements

The NRC has lowered standards so the utilities can continue using the thin walled canisters rather than requiring more robust containers.

c. Thick Casks

Thick casks used in most other countries and some U.S. sites have superior features:

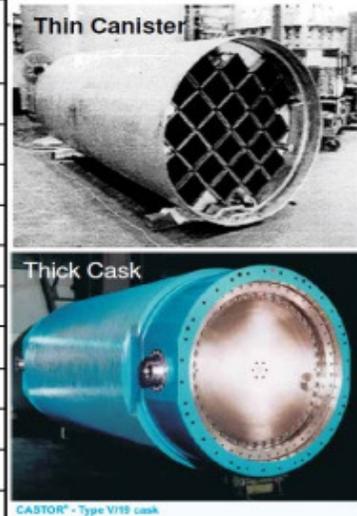
- Thicker walls (e.g., 10 to 20 inches thick) vs. 1/2 to 5/8 inch thick.
- Ability to remotely monitor for helium leaks.
- Ability to easily inspect the exterior of the canisters.
- Not subject to stress corrosion cracking.
- Not subject to concrete degradation. Concrete overpacks/casks are not needed.
- Robust radiation protection for both storage and transport.
- Reduced cask drop and handling risks results in fewer opportunities for significant radionuclide releases. [SANDIA Human Reliability Analysis Informed Insights on Cask Drops, NUREG/CR-7016, February 2012 \(ML110610673\), pp 7-1 and 7-2](#)

The use of better canisters was one of the reasons that the Fukushima disaster wasn't even worse. If the canisters had failed, Tokyo would likely have had to be evacuated.

There are some thicker walled casks that are approved for use in the U.S. – but those could be more expensive, which would not encourage their use.

### Ten reasons to use thick nuclear waste storage casks

Safety Features	Thin canisters	Thick casks
1. Thick walls	1/2"- 5/8"	10"- 19.75"
2. Won't crack		✓
3. Ability to repair, replace seals		✓
4. Ability to inspect (inside & out)		✓
5. Monitor system prevents leaks		✓
6. ASME container certification		✓
7. Defense in depth (redundancy)		✓
8. Store in concrete building		✓
9. Gamma & neutron protection	Need overpack	✓
10. Transportable w/o add'l cask		✓
Market leader	<b>U.S.</b>	<b>World</b>



SanOnofreSafety.org

d. Potential Conflict as Canister Buyer & Seller

<https://sanonofresafety.org/nuclear-waste/>

U.S. utility companies choose the inferior steel/concrete canister designs due to cost. According to the [National Research Council of the National Academies \(2006\), Safety and Security of Commercial Spent Nuclear Fuel Storage](#), National Academies Press, Washington D.C., page 63.

*“The vendors informed the committee that cost is the chief consideration for their customers when making purchasing decisions. Cost considerations are driving the cask industry away from all-metal [thick] cask designs and toward [steel/]concrete designs for storage.”*

e. Holtec Canisters in Use at Indian Point

Holtec canisters are already in use at Indian Point:

As of June 2013, the Indian Point Independent Spent Fuel Storage Installation (ISFSI) contained the following number of canisters loaded between 2008 & 2013:

19	Holtec HI-STORM 218
5	Holtec HI-STORM IP1

Each canister contained 32 fuel assemblies.

No more recent public information has been identified.

### C. Holtec Dry Storage Downloading System

a. Damage to Containers

Canisters are loaded with the highly radioactive nuclear waste fuel removed from reactor cores. This requires a downloading system.

All Holtec canisters stored at San Onofre are likely damaged (gouged and scraped) due to Holtec downloading system. There is only 1/4” clearance between the walls of each 54-ton steel canister and a steel 2” thick Guide Ring inside each storage hole.

[HI-STORM UMAX System FSAR Revision 3 \(ML16193A339\)](#), June 29, 2016 (page 3-46) There is no method to prevent or repair the damage.

Facilities with spent fuel pools and ISFSI licenses, are [required to be able to unload fuel from canisters back into the pool](#). San Onofre’s Chief Nuclear Officer admitted this is not possible to do with the four defective canisters, since they are too hot (200 to 300 degrees C) to unload back into the pool (water boils at 100 degrees C). He referred to this as a “reflooding” problem.

Even microscopic scratches, pits or other corrosion, such as from moist salt air, can trigger cracking. They admit once a crack starts it can grow through the wall in only [16 years](#).

b. Request to Lighten Transit Casks

As noted above, in order to lighten the total load Holtec wants to move nuclear waste from the spent fuel pools to dry storage casks without filling the Transfer Cask jackets. Experts say that the result would be a very high increase the amount of radiation escaping.