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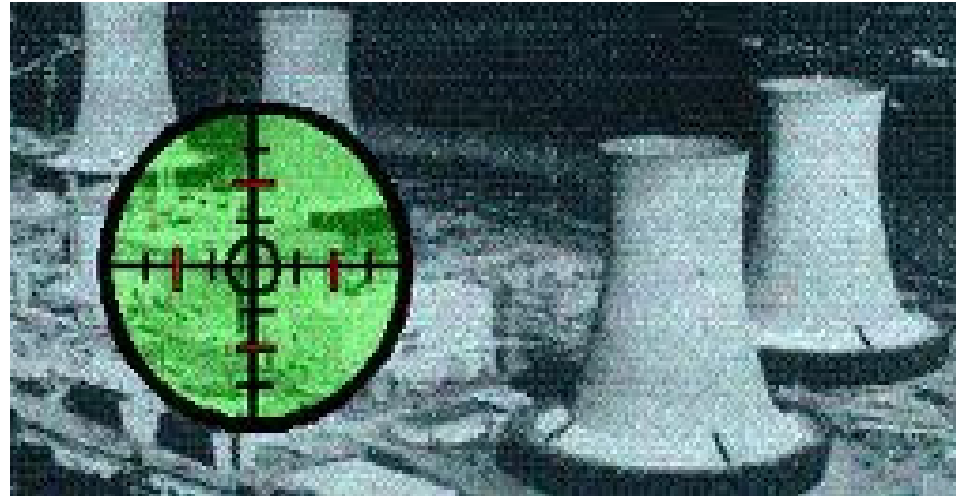
June 27, 2013

Nuclear Safety and Security Best Practices

A photograph of a desert landscape with a fence and a "KEEP OUT" sign. The scene is set in a dry, open field with sparse vegetation and distant mountains under a blue sky with scattered white clouds. A wooden post stands in the foreground, with a chain attached to it. A sign with the words "KEEP OUT" is hanging from the fence. To the right, a large, empty rectangular frame is visible, possibly a window or a sign frame. The overall atmosphere is one of isolation and restriction.

Fukushima: Safety and Security

- Fukushima could have been caused by a terrorist attack
- Hard to adjust to hypothetical threats, easier to respond afterwards
- Japanese government has done a lot to prevent another nuclear accident, but has not done enough to prevent a security incident



Was the Accident Preventable?

- Safety incident at Fukushima could have been prevented if U.S. post-9/11 security recommendations were adopted
- “If NISA had passed on to TEPCO measures that were included in the B5b subsection of the U.S. security order that followed the 9/11 terrorist action, and if TEPCO had put the measures in place, the accident may have been preventable.”

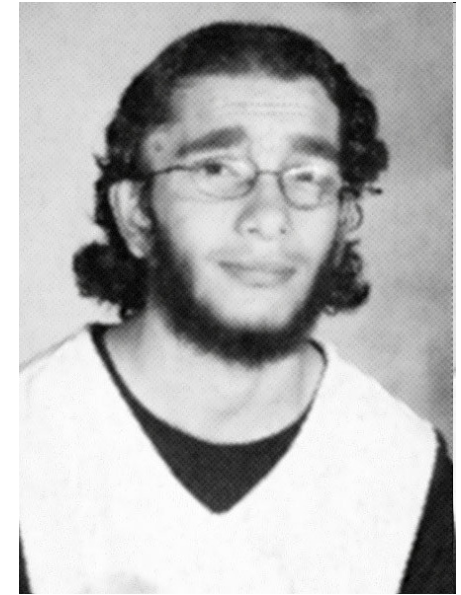
—NAIIC Summary Report

Terrorists May Sabotage or Attack Nuclear Reactors

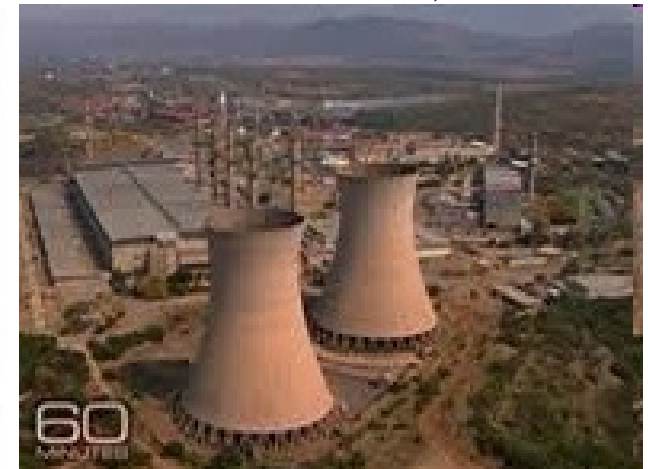
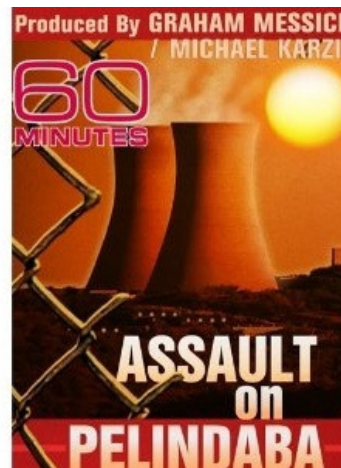
Date	Country	Facility
Nov 1972	USA	Research Reactor, Oak Ridge National Laboratory
Mar 1973	Argentina	NPP in Atucha
Aug 1975	France	NPP in Brennilis
Jun 1977	Spain	NPP in Lemoniz
Oct 1977	Spain	NPP in Lemoniz
Dec 1977	Spain	NPP in Lemoniz
Jun 1979	Spain	NPP near Bilbao
Jul 1982	France	Superphoenix Breeder Reactor, Malville
Dec 1982	South Africa	NPP
May 1983	Spain	NPP in Tafalla
Jun 1985	Philippines	NPP
1995-1996	Russia	Nuclear Submarine Hijacking Plan
Aug 2000	Australia	Research reactor at Lucas Heights
Oct 2002	Russia	Kurchatov Institute
Mar 2003	USA	NPP
Jun 2006	Canada	NPP
Nov 2007	USA	NPP
Nov 2007	South Africa	NPP



Melvin Cale (Oak Ridge)



Fahim Ahmad (Toronto 18)



Pelindaba, South Africa

Data from Fritz Steinhausler and Scott Sagan

Y-12 Oak Ridge Incursion



- July 2012 security breach
- Megan Rice, 82 year old nun and two other activists



- Other anti-nuclear intrusions in France and Sweden

The Nuclear Terrorist Threat

Osama bin Laden
(al-Qaeda)



Shoko Asahara
(Aum Shinrikyo)



The danger of nuclear terrorism existed before 9/11 and will continue to exist even though al-Qaeda has been significantly weakened.



Wilfried Böse and Brigitte Kuhlmann
(Revolutionary Cells)



Marina Petrella
(Red Brigades)



Dzhokhar Dudayev
(Chechen Rebels)

Improving NPP Security in Japan

- Background checks for NPP workers
- ACNS report calls for trustworthiness tests
- No progress in Diet

Alternative Policies?

- Two man rules
- Colleague reporting
- Both are problematic



Two Man Rule Problem

Indira Gandhi Case

- Death threats after 1984 crackdown on Sikh uprising
- Additional bodyguards added
- Mrs. Gandhi prevented the removal of Sikh guards
- Two Sikh guards assassinated her on October 31, 1984

“What we did not perceive was that an attempt could be made inside the Prime Minister’s house.”

- H.D. Pillai, Head of Personal Security

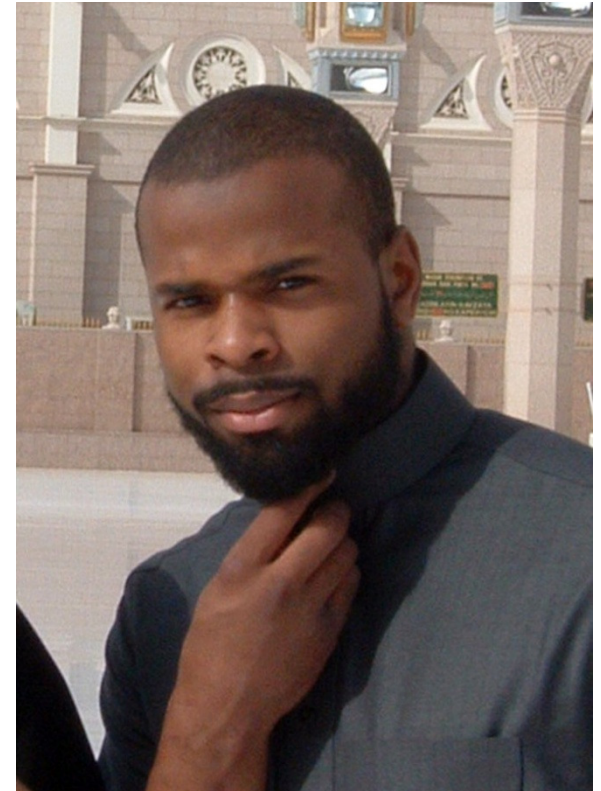


Beant Singh and Indira Gandhi

Problem with Colleague Reporting

Sharif Mobley Case

- Arrested in Yemen in March 2010
- Employed at five U.S. nuclear facilities between 2002 and 2008
- In contact with Anwar al-Awlaki
- NRC permitted temporary access to critical sites before full FBI screening was completed
- No one reported his radicalization



Sharif Mobley

“Fellow nuclear plant workers said Mr. Mobley had referred to non-Muslims as “infidels” and had visited “unusual” Web sites on his personal computer.”

- Scott Shane, *NYT*, Oct. 4, 2010

Avoid the “Myth of Absolute Security” and Do Not Focus Exclusively on Prevention at the Expense of Mitigation



Could “B5b measures” have prevented Fukushima accident?

- In view of 9.11 attack, USNRC ordered the licensees to take “B.5.b measures” to adopt mitigation strategies, using readily available resources to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities to cope with the loss of large areas of the facility due to large fires and explosions from any cause, including beyond-design-basis aircraft impacts;

- B.5.b measures have been implemented steadily in US NPPs;
- The NAIIC Summary Report pointed out Fukushima accident may have been prevented if the B.5.b measures had been in place at Fukushima Daiichi NPP:

“If NISA had passed on to TEPCO measures included in the B.5.b subsection of the U.S. security order that followed the 9/11 terrorist action, and if TEPCO had put the measures in place, the accident may have been preventable.”

- Also, at the NRC meeting held 10 days after the Earthquake, it was recognized that the enhanced security measures under B.5.b could have been effective in responding to accidents like Fukushima;
- Though the NISA was informed, well before Fukushima accident, that USNRC had requested additional B.5.b security measures at all operating NPPs in US, this information was not shared within NISA nor with Japanese operators and similar measures were never implemented;

- Why this difference in the responses of Japanese and US Governments in relation to the additional threats posed by 9.11 attacks? This could be attributed to the gap between the two countries' perceptions of the nuclear terrorism threat;
- The US in fact experienced the terrorist attacks on September 11, while in Japan the primary concern of nuclear security threat had been the risk of illegal transfer of nuclear materials for nuclear explosive devices;

- Thus, the physical protection of nuclear materials has been historically under the mandates of the JAEC in assuring the peaceful use of nuclear energy, and there had been no strong arguments over the years that countermeasures to prevent nuclear accidents caused by human acts should be also placed under the mandates of the Nuclear Safety Commission;
- This sense of compartmentalization of safety and security was so strong in Japan.

- As a result, even when senior officials in the safety division at the NISA were informed of US's B5b measures for counterterrorism, they did not recognize that such measures were relevant to their own work of safety;
- Additionally, due to a general perception that the risk of terrorist attacks like 9.11 occurring in Japan is low, the NISA officials lacked in the consideration to convey this information to the nuclear security divisions in charge.

- Therefore, the lack of communication among NISA's safety regulation division and nuclear security division resulted in this compartmentalization;
- The lessons learned from a nuclear security event should be shared with the safety regulation division for further consideration of any applicability in the area of assuring nuclear safety, and vice versa;
- Thus, there is a need for the synergy between nuclear safety and security;

- A new regulatory organization, Nuclear Regulation Authority (NRA), was inaugurated on September 19, 2012, with the centralized authority in nuclear safety, safeguards and security. It is expected that this reform would enhance the opportunity of attaining the synergy between nuclear safety and security, or their closer communication and coordination;
- Further, after Fukushima, Japan's perception of a nuclear terrorism threat has greatly changed.