

Case Study

August 31, 2011

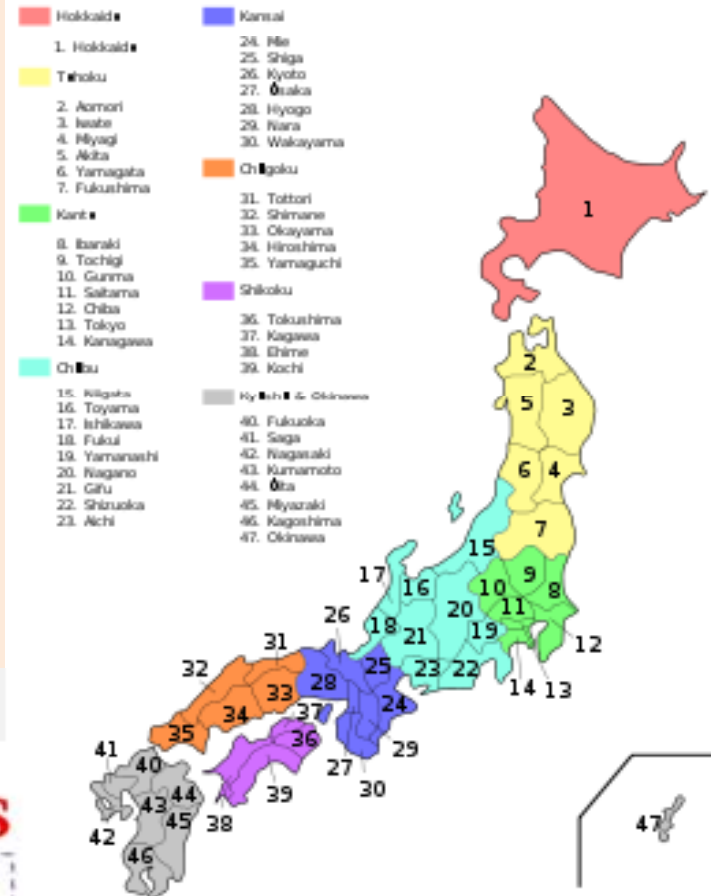
แผ่นดินไหว /Tsunami และ การ จัดการความปลอดภัย โรงไฟฟ้านิวเคลียร์ ของญี่ปุ่น

โดย สุนทร คุณชัยมั่ง

IMAGEPLUS

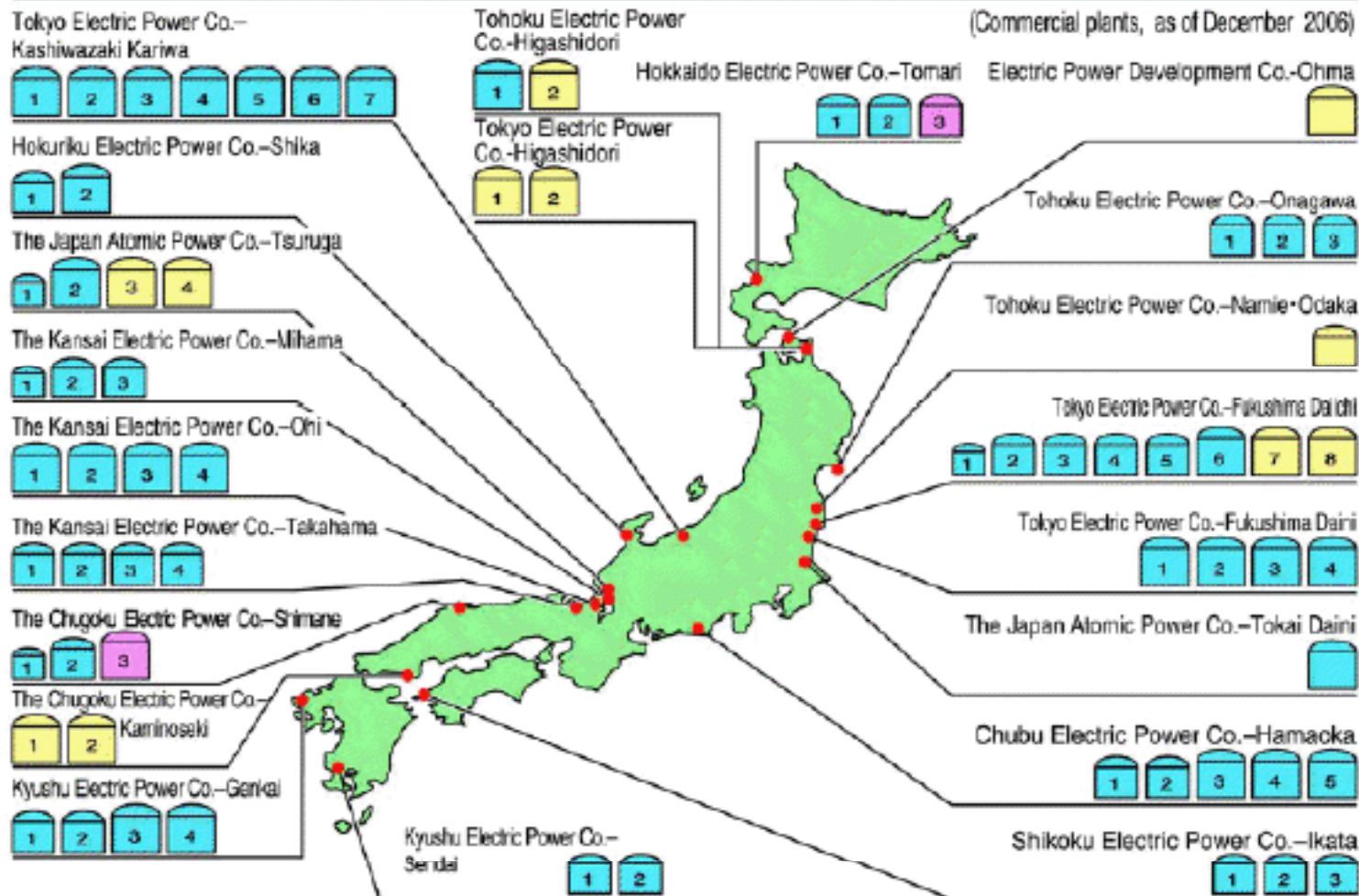
ก้าวไกลสู่องค์กร ก้าวแห่งประสบการณ์

Regions and Prefectures of Japan



Sendai Earthquake / Tsunami # Fukushima Nuclear Power Plant

Nuclear Power Plants in Japan



Output scale



Under 500MW



Under 1,000MW



Over 1,000MW

Operating

Under construction

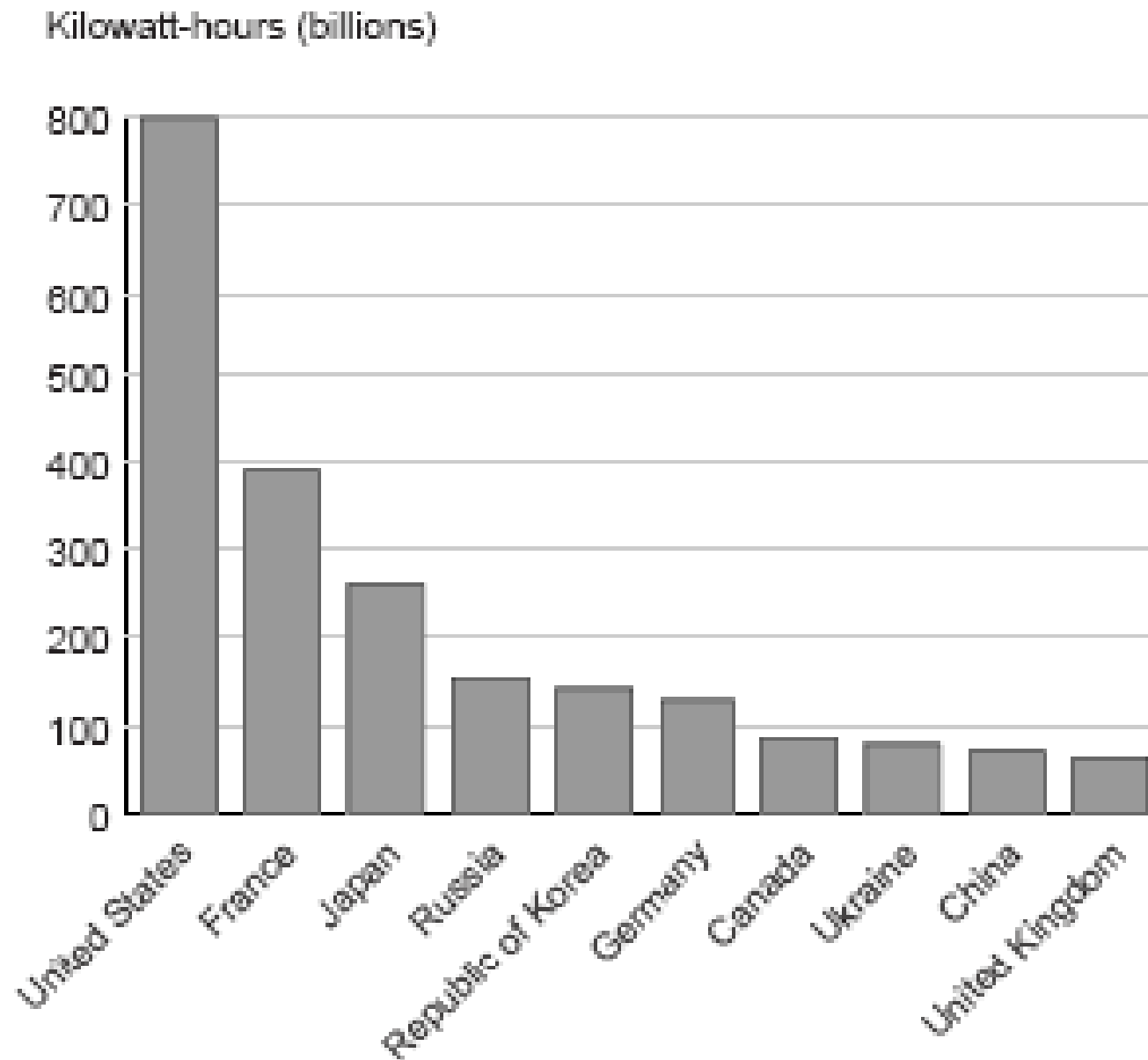
Preparing for construction

	Number of Units	Total Output (MW)
In operation	55	49,580
Under construction	2	2,285
Preparing for construction	11	14,945
Total	68	66,810

8

Fukushima มีเตาปฏิกรณ์จำนวน 6 เตา เป็นโรงไฟฟ้าเก่าอายุ 40 ปีแล้ว และมีแผนที่จะขึ้นโรงไฟฟ้าใหม่ 2 โรง

Top 10 Nuclear Generating Countries, 2009, Billion kWh

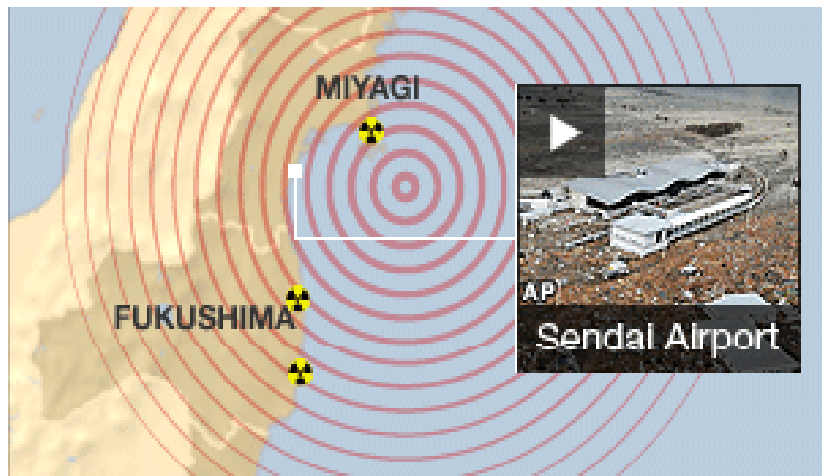


11 March 2011 Last updated at 22:24 GMT

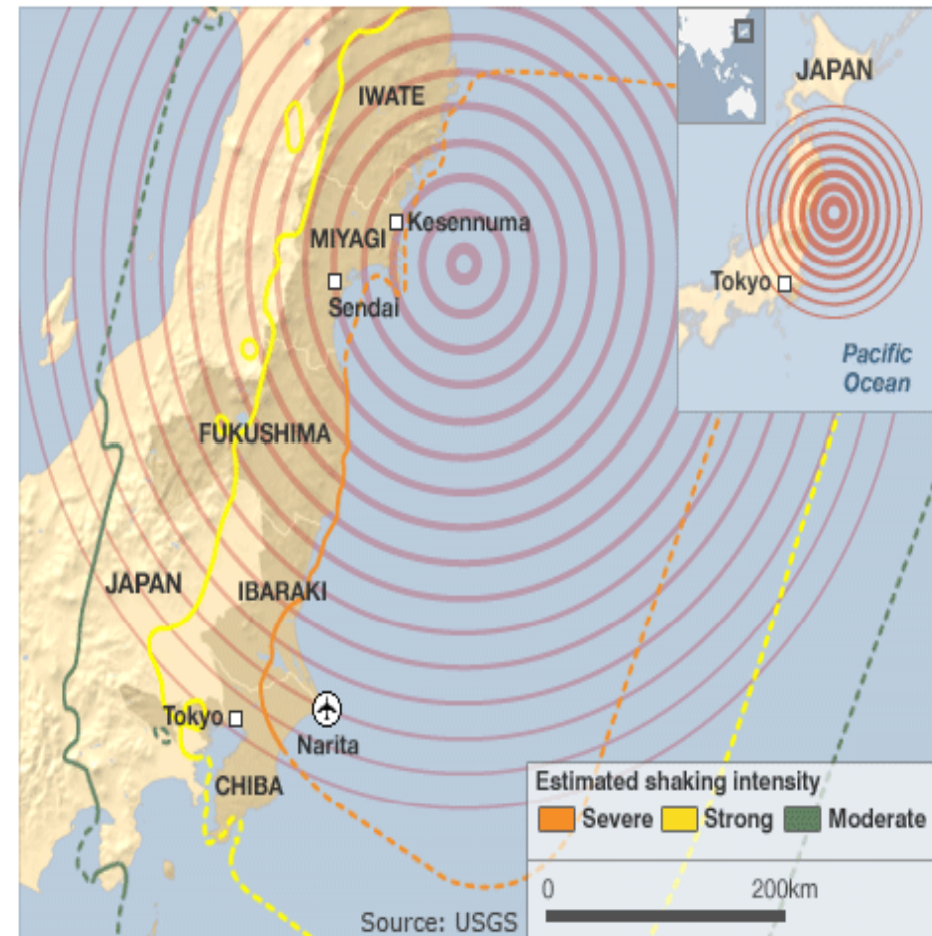


ระดับความรุนแรงและอาณาบริเวณ

Japan earthquake: Tsunami hits north-east

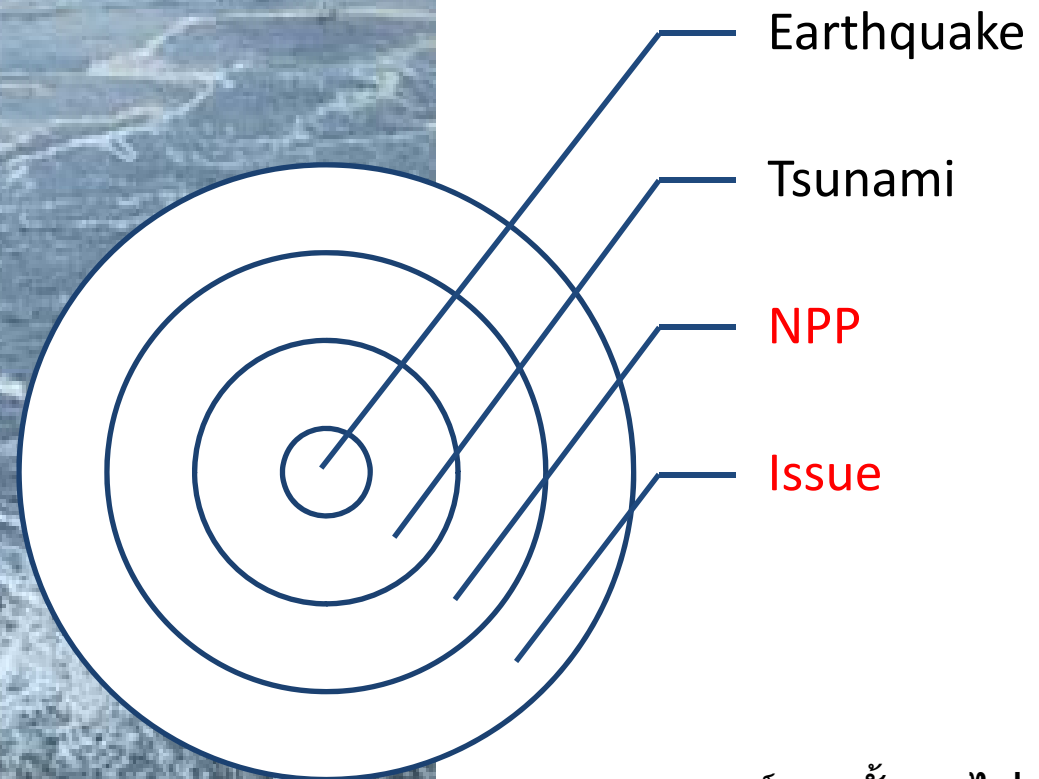


Areas affected by the quake



<http://www.bbc.co.uk/news/world-asia-pacific-12709598>

Issue



สองเหตุการณ์แรกนั้นจบไปแล้ว แต่ NPP เพิ่งจะเกิดขึ้นในระยะถัดมาและจะดำเนินต่อไป เป็น Issue **อีกยาวนาน**

Nuclear Accident



A horizontal timeline diagram with a light blue background. A large, light blue arrow points from left to right, starting from the left edge and ending at the right edge. Three blue rounded rectangular boxes are placed along the arrow. The first box is labeled 'Three Mile Island' with 'Jimmy Carter' below it and '1979' below the box. The second box is labeled 'Chernobyl' with 'Gorbachev' below it and '1986' below the box. The third box is labeled 'Fukushima' with 'Naoto Kan' below it and '2011' below the box. A brown rectangular box with the text 'Nuclear Accident' is positioned at the top left of the diagram.

Three Mile
Island

Jimmy Carter

1979

Chernobyl

Gorbachev

1986

Fukushima

Naoto Kan

2011

Case Study



NPP – Sendai Earthquake

15 มีนาคม 2554

ไม่มีรายงาน

มีรายงานระเบิด

- # 1 – 12 มีนาคม 2554
- # 3 – 14 มีนาคม 2554
- # 2 – 15 มีนาคม 2554
- # 4 – 16 มีนาคม 2554

มีรายงานว่าสามารถ

กำกับความเย็นได้
14 มีนาคม 2554 โดย
WNN - WNA

มีเหตุไฟไหม้อาคาร

11 มีนาคม 2554

แต่ดับได้แล้ว

รายงานโดย IAEA

Tokai

Fukushima
1

Fukushima
2

Onagawa

 The Japan Atomic Power Company

Tokyo Electric Power Company



Tokyo Electric Power Company



Tohoku Electric Power Co., Inc.





Reactor 4: Hit by explosion on **Tuesday**, fire on Wednesday; roof blown off building; water level in fuel pools said to be dangerously low

Reactor 3: Contains plutonium, core damaged by explosion on **Monday**; roof blown off building; water level in fuel pools said to be dangerously low

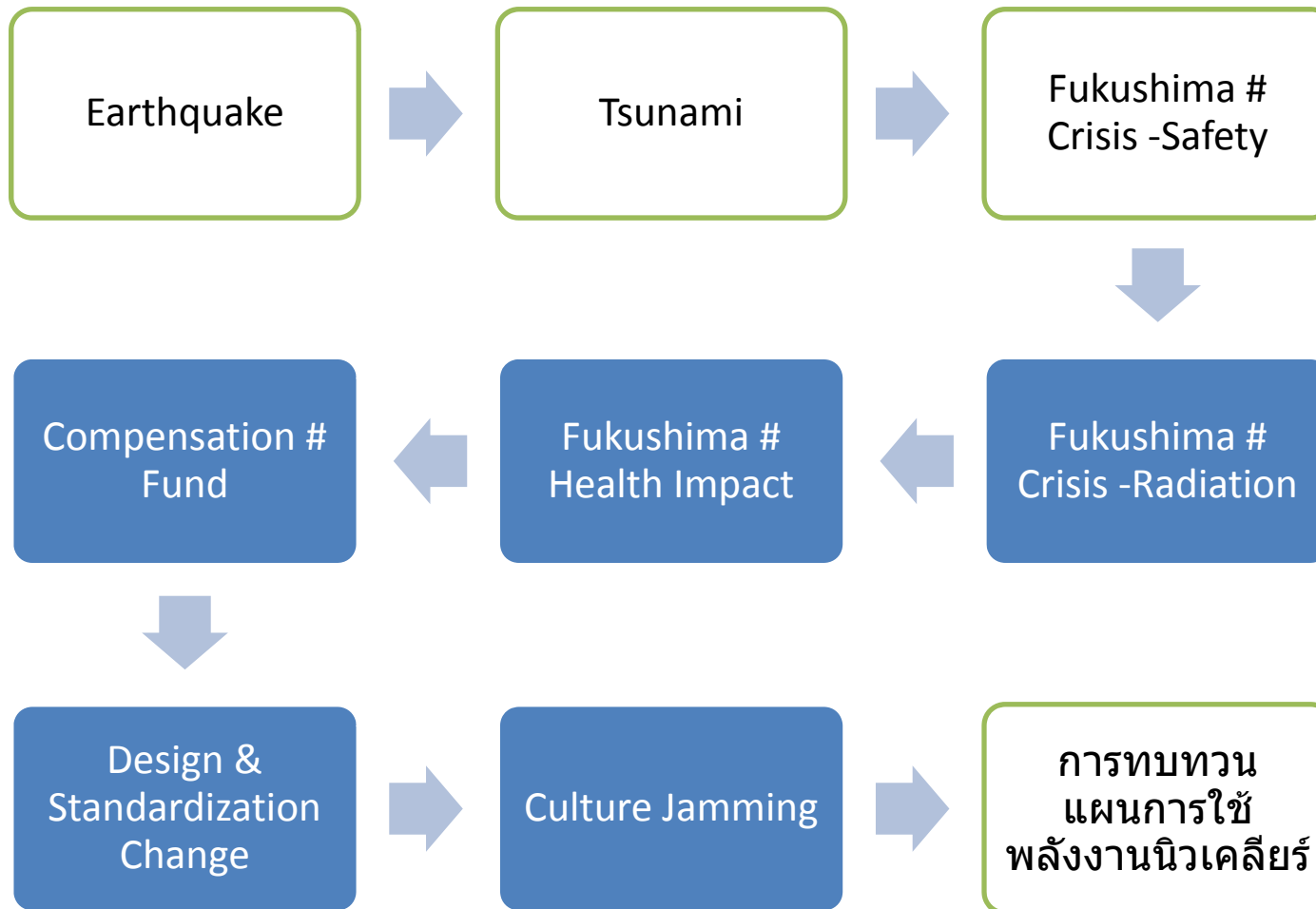
Reactor 2: Damage to the core, prompted by a blast on **Tuesday**, helped prompt raising of the nuclear alert level

Reactor 1: Fuel rods damaged after explosion on Saturday March 12

จะเกิดอะไรขึ้น – ต่อจากนี้ไป (มีนาคม 2011)



ผลกระทบเบื้องต้น Fukushima/TEPCO - NPP



Japan quake: PM calls for unity in face of disaster



11 March 2011 Last updated at 08:16 GMT

A 8.9 magnitude earthquake has hit the Pacific coast of Japan.

A tsunami has caused major damage in the north of the country, sweeping away buildings and cars.

นายกรัฐมนตรี
นาโตะ คัน ออกมา
สัมภาษณ์หลังจาก
เหตุการณ์เกิดขึ้น 3
ชั่วโมง ระบุสถานการณ์
ที่โรงไฟฟ้านิวเคลียร์
เป็นเรื่องที่อยู่ใน
ความสามารถที่จะ
กำกับได้ (ระบุว่าเป็น
เรื่อง tiny)

เป็นไปตามขั้นตอนของ
การบริหารประเด็นหรือ
การจัดการในภาวะวิกฤติ



TOKYO ELECTRIC POWER COMPANY

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Challenges of TEPCO

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TEPCO News

TEPCO News

News Source for Media

Press Releases

Press Release (Mar 12, 2011)

Plant Status of Fukushima Daini Nuclear Power Station (as of 1PM March 12th)

Unit 1 (shut down at 2:48PM on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- At 8:19am, there was an alarm indicating that one of the control rods was not properly inserted, however, at 10:43am the alarm was automatically called off. Other control rods has been confirmed that they are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor had been done by the Reactor Core Isolation Cooling System, but at 3:48AM, injection by Make-up Water Condensate System begun.
- At 6:08PM, we announced the increase in reactor containment vessel pressure, assumed to be due to leakage of reactor coolant. However, we do not believe there is leakage of reactor coolant in the containment vessel at this moment.
- At 5:22AM, the temperature of the suppression chamber exceeded 100 degrees. As the reactor pressure suppression function was lost, at 5:22AM, it was determined that a specific incident stipulated in article 15, clause 1 has occurred.
- We decided to prepare implementing measures to reduce the pressure of the reactor containment vessel (partial discharge of air containing radioactive materials) in order to fully secure safety. This preparation work started at around 9:43am.

Unit 2 (shut down at 2:48PM on March 11th)

- Reactor is shut down and reactor water level is stable.
- Offsite power is available.
- Control rods are fully inserted (reactor is in subcritical status)
- Status of main steam isolation valve: closed
- Injection of water into the reactor had been done by the Reactor Core

Press Release โดย
บริษัท TEPCO เน้นสาระ
และลำดับเรื่อง

ข่าวและการจัดการเหตุ

	ข่าวและการจัดการ	รายละเอียด	ข้อสังเกต
1	รายงานข่าว โดย http://www.bbc.co.uk/news/world-asia-pacific-12709598	<p>พร้อมกับรายงานข่าวเหตุการณ์แผ่นดินไหวและ Tsunami และความเสียหายที่เกิดขึ้นของสำนักข่าวระหว่างประเทศ ต่างก็รายงานความกังวลที่มีต่อโรงไฟฟ้านิวเคลียร์ที่อยู่ในแนวผลกระทบ 4 โรง ซึ่งหยุดเดินเครื่องเพื่อความปลอดภัย</p> <p>มีการอพยพประชาชนประมาณ 1000 คนที่อยู่ใกล้กับโรงไฟฟ้า Fukushima ไปอยู่ในที่ปลอดภัย</p> <p>ประเด็นเกี่ยวกับความร้อนของน้ำที่เตาปฏิกรณ์ที่ร้อนมากกว่าปกติ โดยระบบลดความเย็นไม่ทำงาน --กรณีดังกล่าวมีข่าวว่าทางการสหรัฐอเมริกาให้ความช่วยเหลือแก่ทางการญี่ปุ่นยืนยันในการจัดการโดยตนเอง</p>	จำนวนคนนี้สำนักข่าว kyodo news รายงานจำนวน 2000 คน
2	รายงานข่าวโดย http://news.sky.com/skynews/Home/World-News/Video-Japan-Earthquake-Tsunami-Swamps-Land-After-89-Magnitude-Quake-Rocks-Buildings-In-Tokyo/Article/201103215950160	<p>Japan's nuclear plant operator Tokyo Electric Power said on Saturday that a second of its atomic plants in the quake-hit area was experiencing reactor cooling problems.</p> <p>Although officials believed radiation would only rise about eight-fold in the containment area, Kyodo news agency said a nuclear safety panel believed it <u>was 1,000 times above normal.</u></p>	ท่าทีต่อการชี้แจงข่าวหรือบริหารประเด็นของหน่วยงานที่รับผิดชอบของญี่ปุ่น -นิวเคลียร์
		<p>Japanese prime minister Naoto Kan wanted the evacuation zone around the stricken reactors widened to six miles as officials examined the area.</p> <p><u>"I will go to the Fukushima nuclear power plant to grasp the situation there,"</u> Mr Kan said.</p>	<p>ท่าทีต่อความรับผิดชอบของนายกรัฐมนตรี</p> <p>(ไปในที่เกิดเหตุ – แสดงความรับผิดชอบและย้ำในความปลอดภัย)</p>

	ข่าวและการจัดการ	รายละเอียด	ข้อสังเกต
1	Nuclear Engineering International	Onagawa, Fukushima Daiichi, Fukushima Daini and Tokai nuclear power stations have all automatically shut down.	
2	Reuters . / IAEA	A fire had broken out at Onagawa nuclear power station, according to Reuters . The International Atomic Energy Agency (IAEA) reports that fire has been extinguished.	การชี้แจงเรื่องไฟดับแล้วของ IAEA
3	<i>Nature's</i> Tokyo correspondent, David Cyranoski	the emergency core cooling system (ECCS) at the Fukushima #1 plant is not working due to a loss of electrical power, and problems with the backup diesel geenrator.	
4	Reuters reports .	UPDATE: The Japan Atomic Industrial Forum has announced that the Fukushima reactor's core "still has a sufficient amount of water for cooling, with no danger of the nuclear fuel being exposed". "Several emergency generator vehicles have rushed to the scene to provide the necessary power for the water supply," the statement says. It adds that the government will direct residents living with a 3-km radius of the reactor to evacuate. Meanwhile, the US Air Force has delivered additional coolant to the Fukushima plant	

IAEA

☆ <http://www.iaea.org/newscenter/news/2011/tsunamiupdate.html>

lus Gmail Imageplus.co.th Imageplus Webmail (old) Hotmail - Sign In Soonporn Blogger Soonporn Koonchaima... SCB Thailand Facebook

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11
March 2011

Earthquake and Tsunami Update
Staff Report



Vienna, 11 March 2011 (1245 CET) | The IAEA's Incident and Emergency Centre has received information from Japan's Nuclear and Industrial Safety Agency (NISA) that a heightened state of alert has been declared at Fukushima Daiichi nuclear power plant. NISA says the plant has been shut down and no release of radiation has been detected.

Japanese authorities have also reported a fire at the Onagawa nuclear power plant, which has been extinguished. They say Onagawa, Fukushima-Daini and Tokai nuclear power plants were also shut down automatically, and no radiation release has been detected.

The IAEA received information from its International Seismic Safety Centre that a second earthquake of magnitude 6.5 has struck Japan near the coast of Honshu, near the Tokai plant.

The IAEA is seeking further details on the situation at Fukushima Daiichi and other nuclear power plants and research reactors, including information on off-site and on-site electrical power supplies, cooling systems and the condition of the reactor buildings. Nuclear fuel requires continued cooling even after a plant is shut down.

The IAEA's Incident and Emergency Centre provides around-the-clock assistance to Member States in dealing with nuclear and radiological events, including security and disaster related events. (Photo Credit: D.Calma/IAEA)

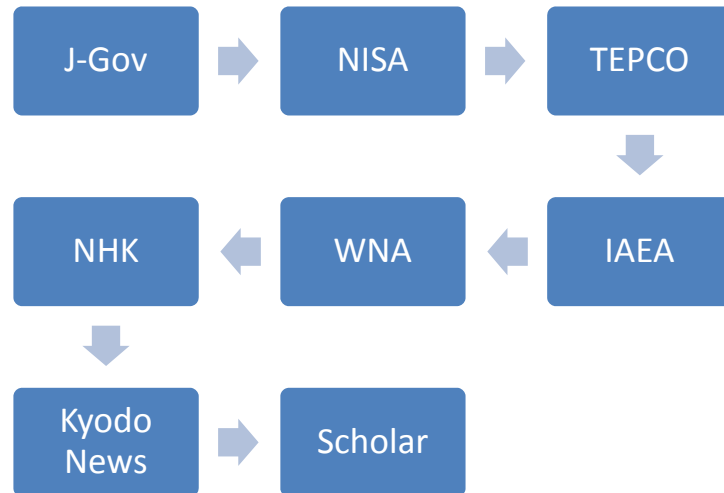
Story Resources

∞ IAEA Incident & Emergency Centre

ข่าวและการจัดการ	รายละเอียด
4 IAEA report	UPDATE 2245GMT: IAEA reports that "pressure is increasing inside the Unit 1 reactor's containment, and the officials have decided to vent the containment to lower the pressure. The controlled release will be filtered to retain radiation within the containment. "

IAEA มีรายงานสถานะในเรื่องนี้อย่างเป็นทางการ เป็นลำดับเรื่องแบบทันที

บทบาทของผู้เกี่ยวข้อง



NISA Nuclear and Industrial Safety Agency

News Release



March 14, 2011
Nuclear and Industrial Safety Agency

Seismic Damage Information (the 23rd Release)
(As of 19:30 March 14, 2011)

Nuclear and Industrial Safety Agency (NISA) confirmed the current situation of Onagawa NPS, Tohoku Electric Power Co., Inc. Fukushima Dai-ichi and Fukushima Dai-ni NPSs, Tokyo Electric Power Co., Inc. as follows:

Radiation levels at nuclear plant now harmful government says



15 March 2011 Last updated at 10:18 GMT

บทบาทของเลขาธิการสำนักงานคณะรัฐมนตรี
ดูเหมือนจะโดดเด่นกว่านายกรัฐมนตรี

Fukushima governor says Japan earthquake victims need help



16 March 2011 Last updated at 12:21 GMT

The governor of Fukushima, Yuhei Sato, has told a press conference that the unfolding catastrophe at the Fukushima Daiichi nuclear plant was not limited to his prefecture, and urged all Japanese people to recognise its national impact.

ผู้ว่า
เมือง Fukushima
ร้องขอความช่วยเหลือ

NEWS

16 March 2011 Last updated at 14:04 GMT

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[In Pictures](#) | [Also in the News](#) | [Editors' Blog](#) | [Have Your Say](#) | [Special Reports](#) | [Libya](#)**LATEST:** Bahraini health minister reported to have resigned in protest against attacks on anti-government demonstrators**LIVE** Japan earthquake BBC News live coverage

The BBC's Chris Hogg in Tokyo says the city is still relatively calm. The risk for the authorities is that fear and panic could cause more problems... 24 SECS AGO

Japanese emperor 'deeply worried'



Japan's Emperor Akihito says in a highly unusual TV address he is "deeply worried" about the nuclear crisis his country is facing following last Friday's quake and tsunami.

LIVE Japan earthquake[Q&A: Health effects of radiation](#)[Analysis: Problems mount](#)['Red tape' forces quake team home](#)[In pictures: Struggling on](#)[Tokyo jittery under surface calm](#)[Foreign firms evacuate staff](#)

ความห่วงใย
จากจักรพรรดิ
ญี่ปุ่น
16 มีนาคม
2554

การกรองขาว - ไม่ใช่เรื่องขาวกรอง

ความจำเป็นในการพัฒนาของผู้รับสาร

ข่าวเพลิงไหม้ที่โรงถลุงเหล็ก JFE Chiba Work



รายงานข่าวในครั้งแรกๆ ว่า มีเหตุไฟไหม้ที่โรงงานถลุงเหล็กที่มีกำลังการผลิตเป็นลำดับ 5 ของโลก ที่นี้

- JFE Steel

- Says there was no fire at its Chiba prefecture steel plant , denying earlier reports.

Factbox: Impact on companies from Japan quake

เป็นประเด็นที่ประมวลข่าวแจ้งสถานะต่างๆ ว่าข้อเท็จจริงที่มีการยืนยัน เป็นอย่างไรบ้าง

<http://www.reuters.com/article/2011/03/11/japanquake-companies-idUSL3E7EB0X420110311>

การรายงานข่าว - ข้อเท็จจริง



ภาพประกอบเป็นไฟไหม้โรง
กลั่นน้ำมัน Cosmo Oil แต่ขาด
หัวข่าวและคำบรรยาย คำ
สัมภาษณ์เป็นเรื่องโรงไฟฟ้า
นิวเคลียร์ที่ Fukushima

ผลงานของสำนักข่าว RT
RT, previously known as **Russia Today**, is a global multilingual television news network based in [Russia](#). RT was the first all-digital Russian TV network.^[1] The service is aimed at the overseas market, similar to [CCTV](#), [DW-TV](#), [France 24](#) and [NHK World](#), and broadcast through satellite and cable operators throughout the world.

Japan's Chernobyl ?



พาดหัวข่าวพร้อมสมญานาม Fukushima

ผลงานของสำนักข่าว RT **RT**, previously known as **Russia Today**, is a global multilingual television news network based in [Russia](#). RT was the first all-digital Russian TV network.^[1] The service is aimed at the overseas market, similar to [CCTV](#), [DW-TV](#), [France 24](#) and [NHK World](#), and broadcast through satellite and cable operators throughout the world.



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Explosion En direct d'un réacteur de la centrale Nucléaire au japon (Video censure)

tralala21200

58 videos

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17,656

Uploaded by tralala21200 on Mar 12, 2011

La 2ème explosion de reacteur en 2jours ! dans la nuit du 13/03/2011 Voici

Show more

13 likes, 8 dislikes

Suggestions



Bfmtv : Nouvelle explosion de réacteur dans la ...

by moha212121
22,194 views



explosion à la centrale nucléaire de fukushima ...

by piettepatrice
30,513 views



Terremoto en Japón: Fuerte explosión en una cen...

by libertaddigitaltv
419,819 views



Explosion d'un partie de la centrale nucléaire ...

by MrLywest
9,255 views



Nucléaire : témoignage d'un Français à Tokyo

by BFMTV
35,748 views



Fukushima : A Japanese Chernobyl ! Fr - En

by sygma707
1,183 views

สัญญาณที่มีต่อภาพลักษณ์ของ TEPCO & Nuclear – Japan Chernobyl



TEPCO'HISTORY – dishonest practices in 2002

Tepco ทำเรื่อง
ที่ไม่เป็นยอมรับ
ในทางปฏิบัติใน
ปี 2002

The image shows a screenshot of the CNIC (Citizen's Nuclear Information Center) website. The website has a red header with the CNIC logo and navigation links. The main content area is white and features several sections: 'The Nuclear Fuel Cycle in Japan', 'Fast Breeder Reactor Program', 'Reprocessing and Radioactive Waste', 'Plutonium Holdings and Plutonium Use Plans', and 'Earthquakes and Nuclear Energy'. A 'BREAKING NEWS' banner is overlaid on the bottom of the website, reading 'TEPCO'S HISTORY Admitted "dishonest practices" in 2002'. Below the banner, there are links to 'Power Plant', 'Hiroshima Nuclear Power Plant Struck By Earthquake', and 'Group Inits: Miyagi Wind'. The CNN logo is visible in the bottom right corner of the banner.

BREAKING NEWS
TEPCO'S HISTORY
Admitted "dishonest practices" in 2002

Source: CNN

TEPCO LIED AGAIN - 2007








มีประเด็น
เกี่ยวข้องกับการ
รายงาน – ปกปิด
ข้อมูลจากเหตุที่
เกิดขึ้นที่โรงไฟฟ้า
Kashiwashaki-
Kariwa

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Fukushima : A Japanese Chernobyl ! Fr - En

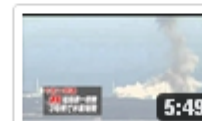
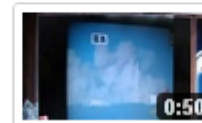
[sygma707](#)89 videos [Subscribe](#)

On April 26, 1986, the day of the accident, winds of 30-40 mph which carries a plume of radioactive dust into the northern Ukraine, Belarus and the Baltics. The harmfulness is heightened by the still high concentration of dust and the presence of radioactive elements extremely short-lived (the activity of radioactive material will decrease from 100% to 40% from the first to the twenty fourth hour). places near the nuclear plant is heavily contaminated by fallout on the ground of some of the dust, including the heaviest.

  0:45 / 1:31 360p  Like Add to [Share](#)[Embed](#)1,289 Uploaded by [sygma707](#) on Mar 12, 2011LINK ► http://www.revuesilence.net/index.php?page=japon_chrono ◀[Show more](#) 

5 likes, 0 dislikes

Suggestions

[Explosion En direct d'un réacteur de la central...](#)by tralala21200
16,889 views[Japan - Vidéo explosion réacteur n°3 de la cent...](#)by TheODTube
9,358 views[12 mars 2011 : Explosion réacteur n°1 de la cen...](#)by Soritrdunucleaire
27,214 views[Explosion Smoke at Japan Nuclear Plant Reactor, ...](#)by FullGoals1000
4,699 views[UFOs At Fukushima Reactor Tragedy? HD](#)by AlienDisclosureGroup
17,597 views[Explosion d'un partie de la centrale nucléaire ...](#)by MrLywest
8,055 views



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Fukushima JET STREAM TO AMERICA

BJVIDEOSLIFE

16 videos

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0:12 / 0:24 360p

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668 views

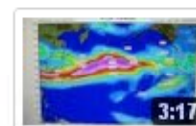
Uploaded by [BJVIDEOSLIFE](#) on Mar 12, 2011

no description available

2 likes, 0 dislikes

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Suggestions



CBC ALERT! Fallout, Map for CANADA BC & USA - ...

by ravenise
82,816 views



Backwards Storms, Jet stream going wrong way, G...

by dutchsinse
20,373 views



Vea el momento de la explosión nuclear

by SubrayadoHD
661 views



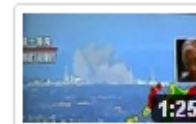
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SBC News coverage in video

ose eager to know what's happening to their family cannot
S AGO

'deeply worried'



Japan's Emperor Akihito says in a highly unusual TV address he is "deeply worried" about the nuclear crisis his country is facing following last Friday's quake and tsunami.

LIVE Japan earthquake

Q&A: Health effects of radiation

Analysis: Problems mount

'Red tape' forces quake team home

In pictures: Struggling on

Tokyo jittery under surface calm

Foreign firms evacuate staff

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protesters

In pictures: Protests cleared

es CIA contractor

Donald Davis - accused of killing two people in Lahore - is "rehabilitated" and his "rehabilitation money" is paid to their families.

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Evacuees facing hardship in Japan



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15 March 2011 Last updated at 08:49 GMT

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Radiation fears after Japan blast

Radiation levels at a Japanese quake-stricken nuclear plant reach levels harmful to human health, a top official warns, after a third blast and a fire.

LIVE Japan earthquake

[Q&A: Risk of meltdown](#)[Q&A: Health effects of radiation](#)[Quake 'moved Japan 4m'](#)[Quake: Special report](#)[In graphics: What went wrong?](#)[Europe reviewing nuclear projects](#)[Before and after images](#)

LIVE Japan earthquake Latest BBC coverage of Japan earthquake

Nathan Gardels suggests in Christian Science Monitor that there may be a silver lining to the earthquake. He says the quake "accomplished what Japan"... 26 SECS AGO

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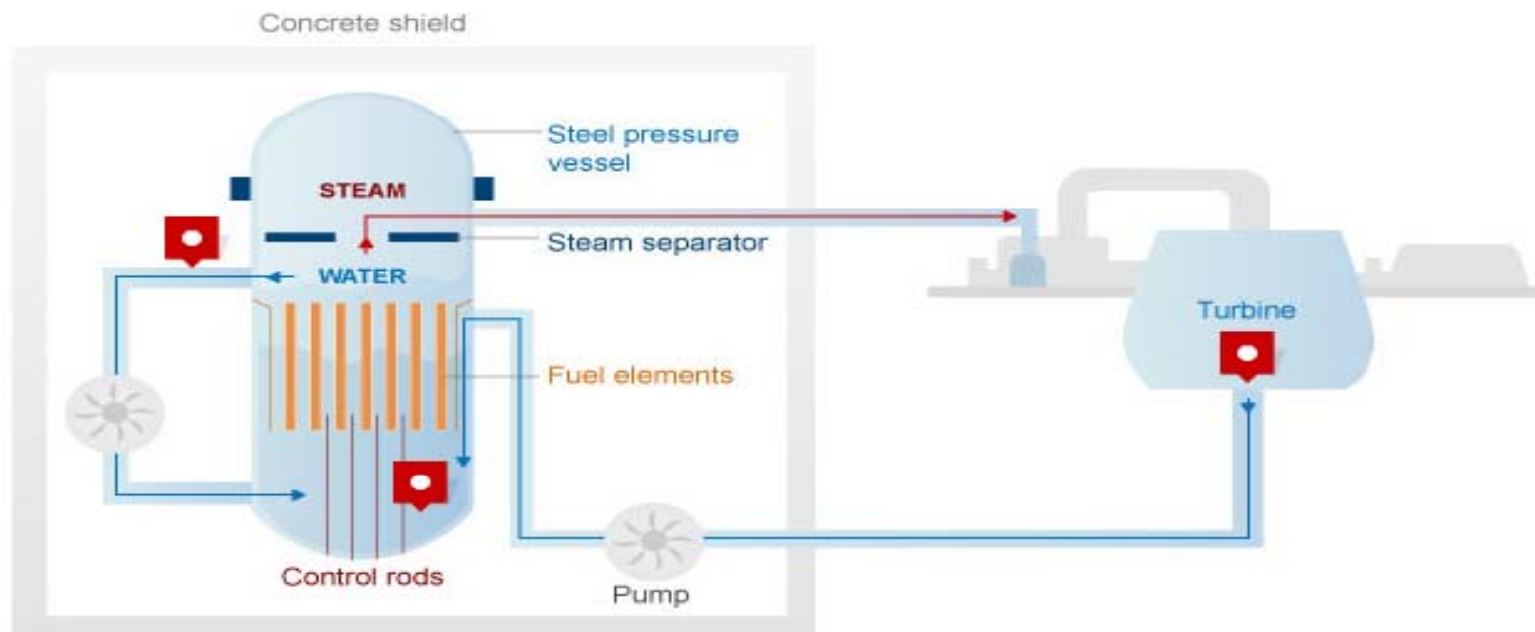
City of fear

[Nigerian battle between Islamist](#)



Explainer: How a nuclear reactor works

March 13, 2011 -- Updated 1801 GMT (0201 HKT)



Producing nuclear energy

Click the points on the graphic above to learn how a nuclear reactor works. A meltdown occurs when there is a catastrophic failure of the reactor core, with a potential for widespread radiation release.

Japan's nuclear concerns explained

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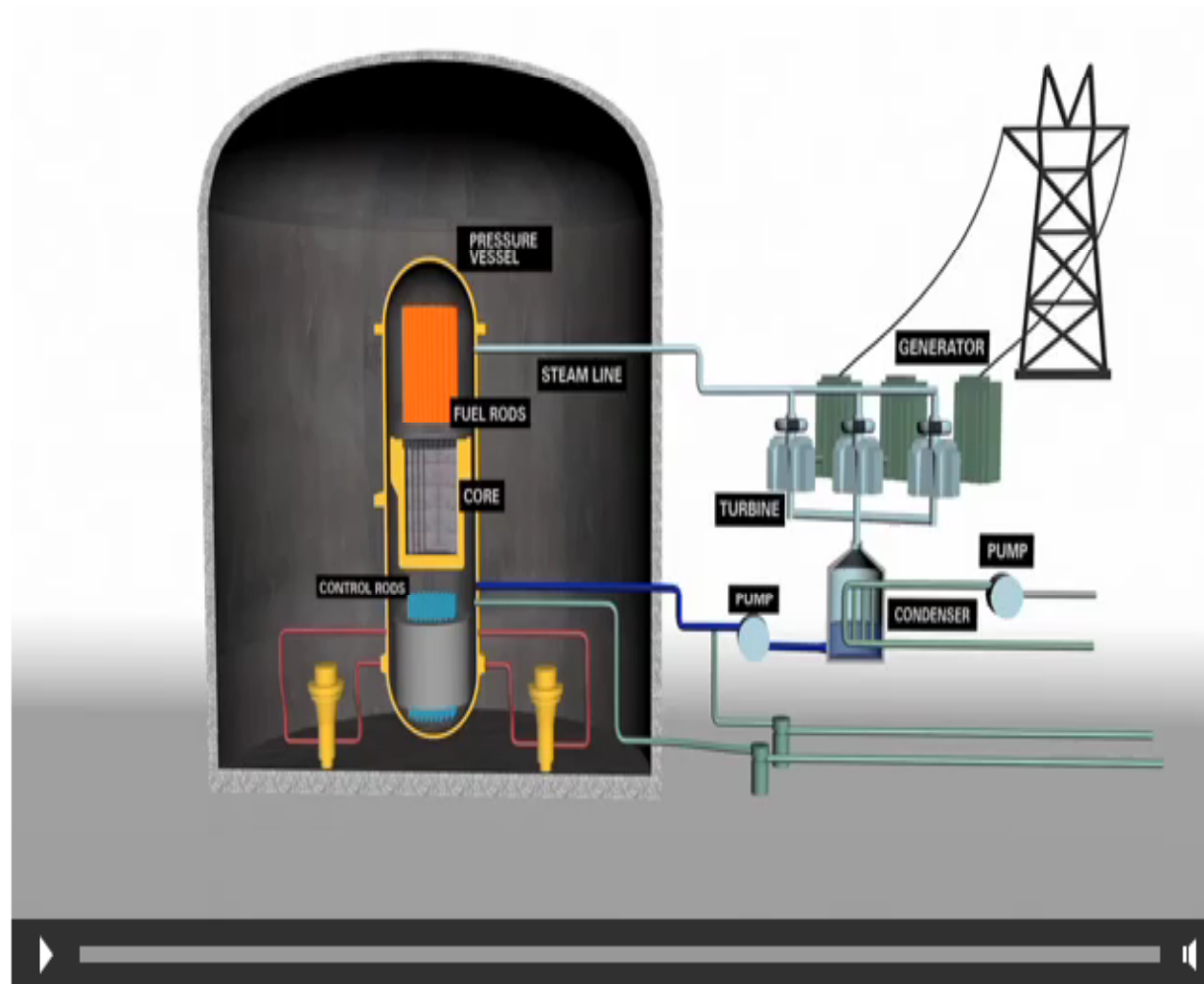
Reactor basics

There are several different types of nuclear reactors, including boiling water reactor systems and pressurized water reactor systems. The reactors at the Fukushima Daiichi plant are boiling water reactor systems. Here's how they work:

At the heart of a nuclear reactor is the reactor vessel, a large steel tank filled with water. It's loaded with 12-foot-long fuel rods made of radioactive pellets encased in zirconium alloy. These ceramic fuel pellets are usually made of enriched uranium 235, which is incapable of creating a nuclear explosion.

Reactor No. 3 at the Fukushima Daiichi plant used more toxic mixed-oxide (MOX) fuel rods, which contain a mixture of uranium and plutonium that is reprocessed from spent uranium.

The fuel rods are loaded vertically into the reactor vessel in



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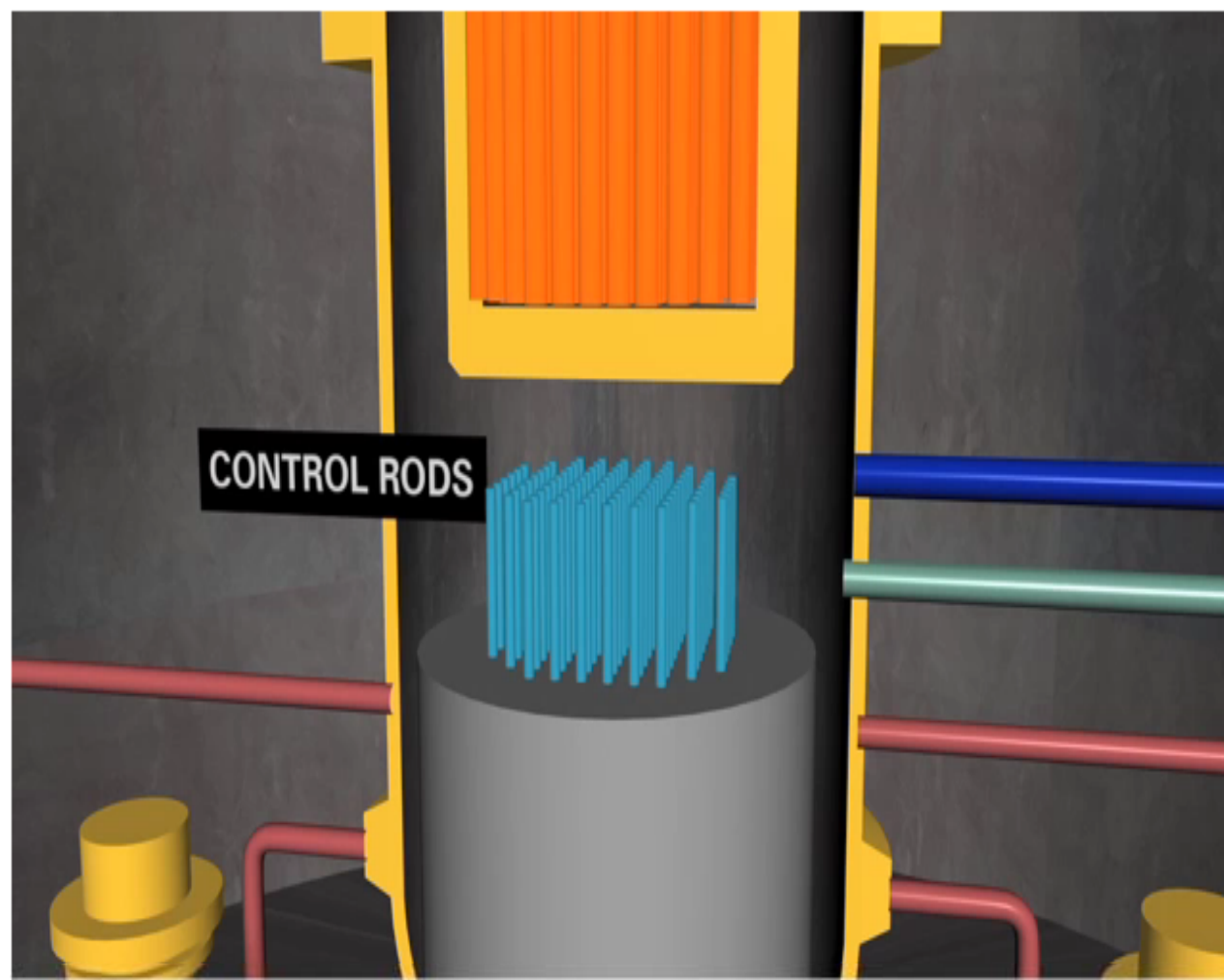
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Normal operation

The speed of the chain reaction and the temperature of the fuel are also controlled by the water in the reactor vessel. If the reaction is properly controlled, it reaches a point of equilibrium known as "criticality," in which the amount of heat produced remains constant.

The heat generated by the nuclear reaction boils the water in the reactor vessel, turning the water into steam. This steam flows out of the reactor vessel through pipes to steam turbines. As the steam turns the turbines, generators connected to the turbines spin and generate electricity.

The steam then travels to a condenser unit, which cools the steam, turning it back into water. This water is pumped back into the reactor, where it is used again to control the reactor temperature and reaction speed.



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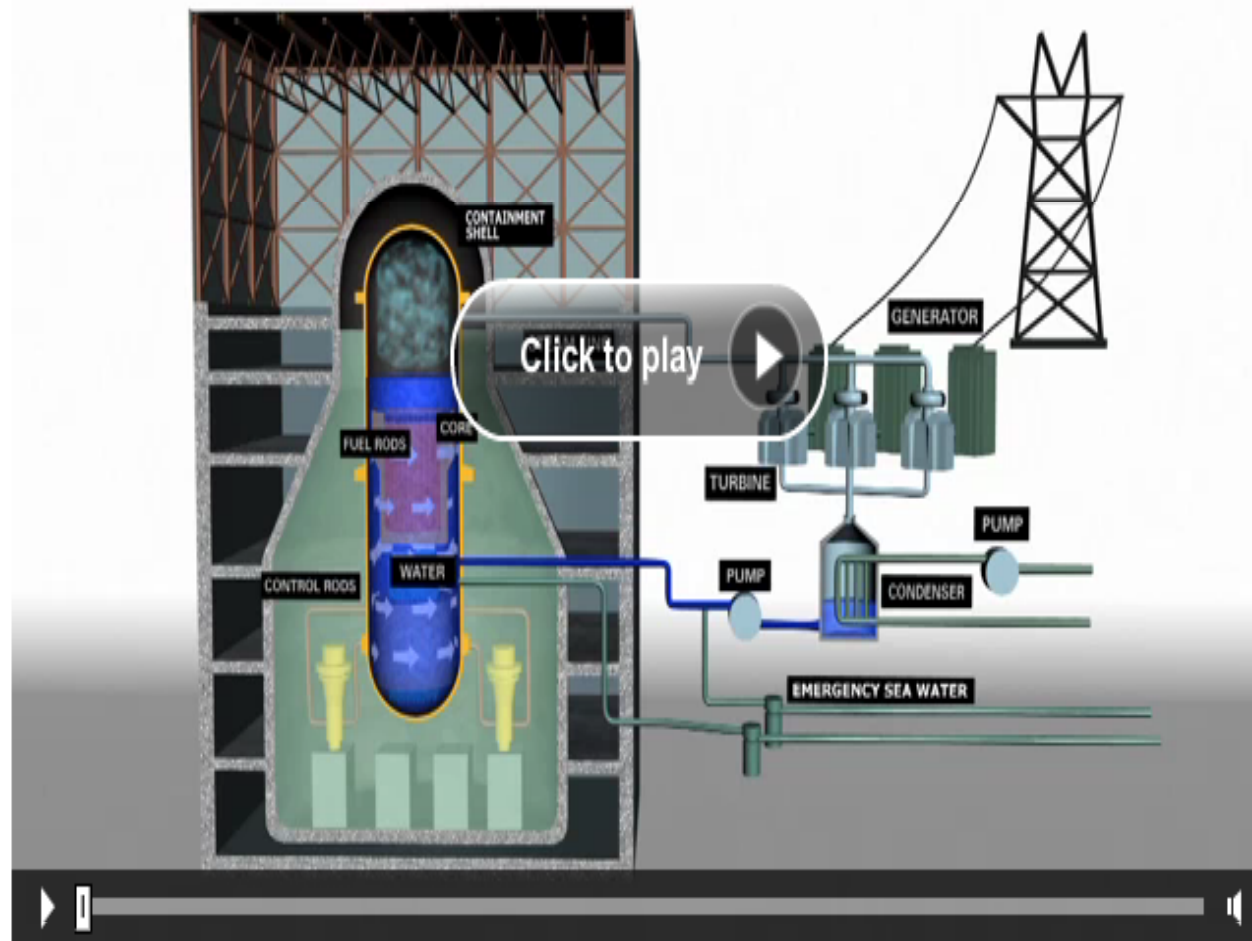
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The earthquake and tsunami

Three of Fukushima Daiichi's six reactors were already shut down for inspection prior to the earthquake and tsunami. The three reactors that were in operation shut down automatically in a matter of seconds when the quake struck.

Even though the control rods were fully inserted to slow the fission chain reaction to a stop, the reactor was still extremely hot. This is known as decay heat, which will be present for months or even years. Cool water is still needed to keep the reactor fuel from overheating and possibly melting.

When the earthquake struck and the Fukushima Daiichi reactors shut down, the water pumps lost power. Emergency diesel generators began to power the pumps. However, the tsunami that soon followed damaged the diesel generators. The pumps then operated on emergency battery power, which lasted for 8 hours before being exhausted.



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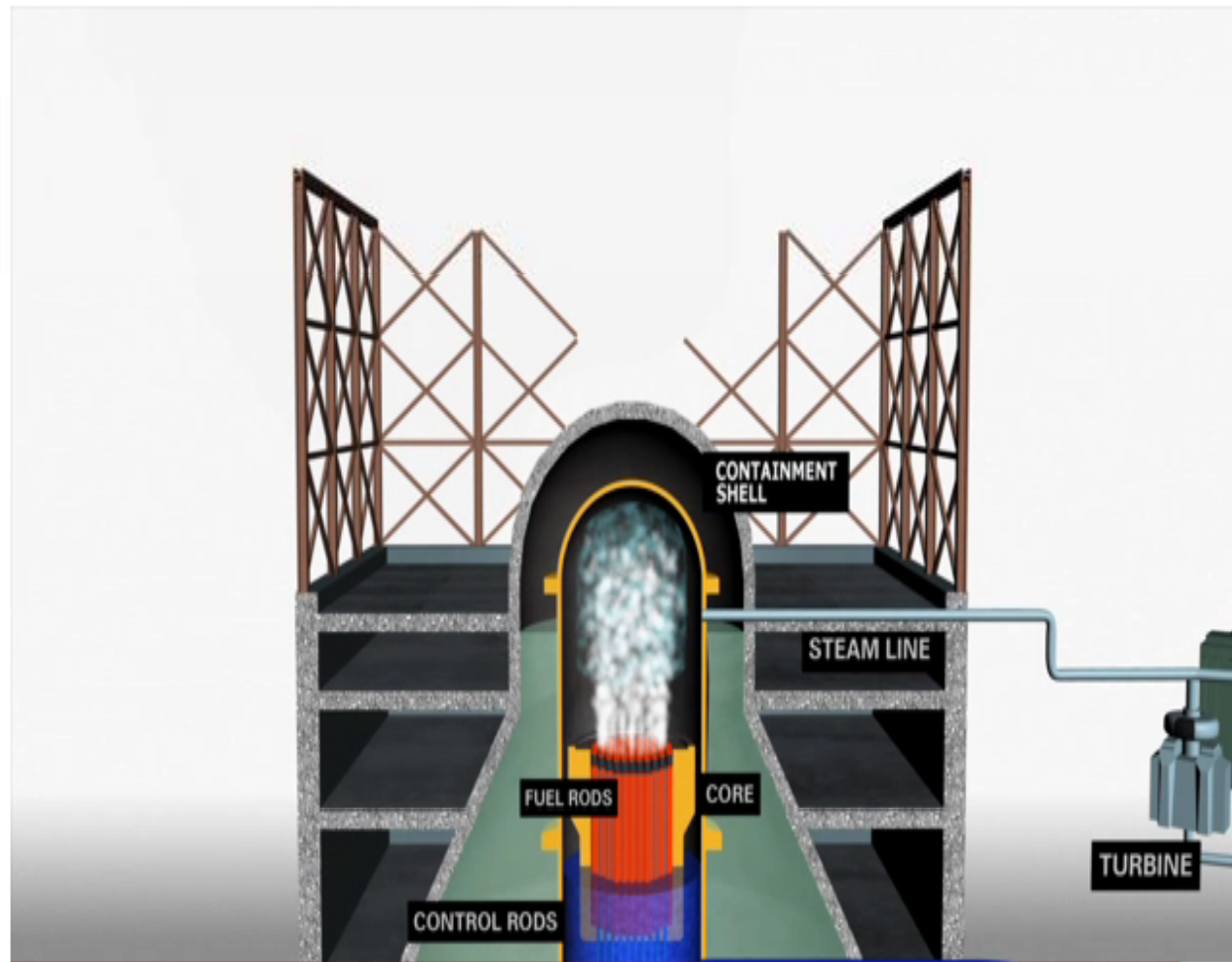
The explosions

It's still unclear exactly what happened, but what is certain is that several explosions rocked the Fukushima Daiichi nuclear power plant in the days after the earthquake and tsunami.

The first explosion occurred in the reactor No. 1 building on Saturday, March 12. A second explosion occurred on Monday, March 14, at reactor No. 3. A third explosion occurred early Tuesday, March 15, at reactor No. 2.

While these explosions caused significant damage to the exterior buildings that house the reactors, it was unclear if the concrete and steel containment vessels suffered any damage.

Officials in Japan say the explosions at the three reactors were likely caused by a buildup of hydrogen gas, which is the highly flammable, lighter-than-air gas used in the Hindenburg.



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Meltdown

The reactor will operate at a safe temperature as long as the control rods are able to control the chain reaction and cool water is pumped into the reactor continuously. If, however, the nuclear reaction or reactor temperature races out of control, a meltdown can occur.

The fuel pellets normally operate at a temperature of 1,400 degrees Fahrenheit. If the temperature rises to 2,200 degrees for a sustained period of time, the fuel rods can become damaged. If the temperature continues to rise, the fuel rods can eventually melt. This melting can release large amounts of radiation and even vaporize the core.

The high temperatures can also compromise the reactor vessel and surrounding containment systems that may be present. If these systems are breached, radioactive material may be released into the surrounding environment.

In Japan and the United States, a thick concrete and steel



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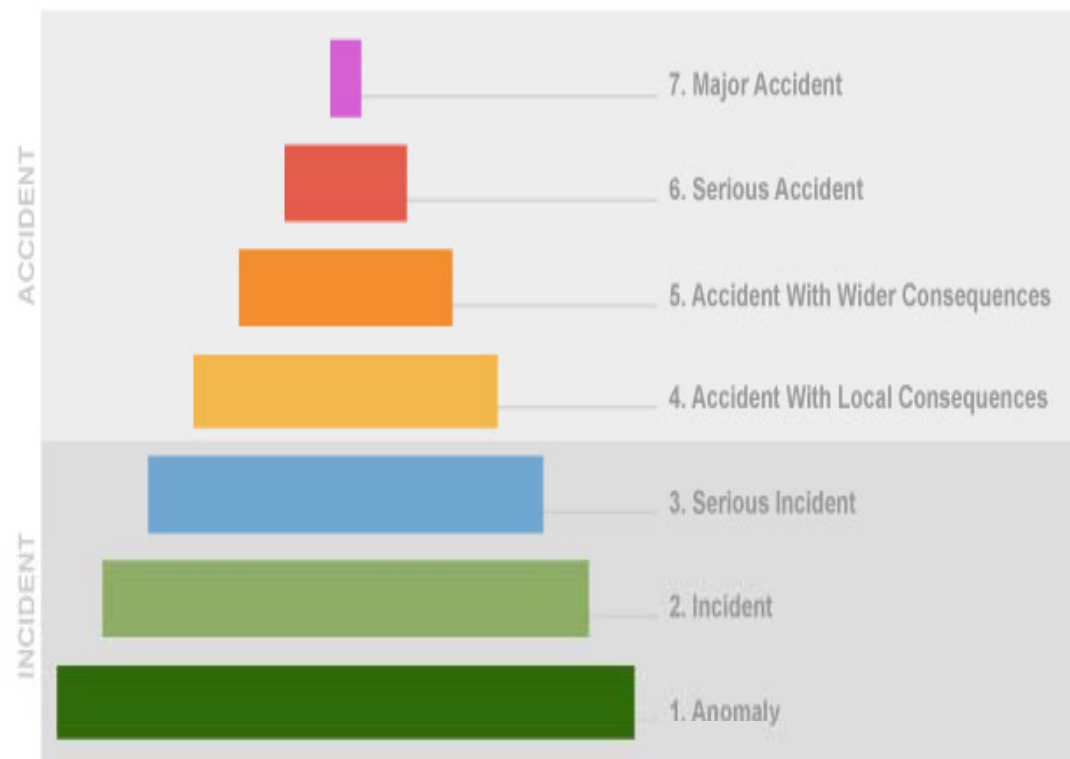
How bad is 'bad'?

The International Atomic Energy Agency (IAEA) developed the International Nuclear and Radiological Event Scale to identify the severity of incidents involving nuclear energy.

Chernobyl was a level 7 accident, the highest level, denoting a "major accident."

Three Mile Island was classified a category 5, which is an "accident with wider consequences."

The IAEA is not yet rating the incident in Japan on the INES scale.



Source: International Atomic Energy Agency

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How much is 'too much'?

Radiation is invisible. You cannot taste it, smell it or feel it. It's not possible to directly measure the amount of radiation exposure a person has had. When you see people with Geiger counters checking a site like Fukushima Daiichi, they're measuring contamination, which generally refers to actual radioactive particles.

There are four main types of ionizing radiation:

--Alpha particles: relatively heavy, cannot penetrate human skin or clothing, but can be harmful if they get into the body in another manner.

--Beta radiation: can cause skin injury and is harmful to the body internally.

--Gamma rays: high-energy invisible light that can damage tissue and is most dangerous to humans.



World Nuclear Association - BBC



Radiation dose	Effect
2 mSv/yr (millisieverts per year)	Typical background radiation experienced by everyone (average 1.5 mSv in Australia, 3 mSv in North America)
9 mSv/yr	Exposure by airline crew flying New York-Tokyo polar route
20 mSv/yr	Current limit (averaged) for nuclear industry employees
50 mSv/yr	Former routine limit for nuclear industry employees. It is also the dose rate which arises from natural background levels in several places in Iran, India and Europe
100 mSv/yr	Lowest level at which any increase in cancer is clearly evident.
350 mSv/lifetime	Criterion for relocating people after Chernobyl accident
1,000 mSv single dose	Causes (temporary) radiation sickness such as nausea and decreased white blood cell count, but not death. Above this, severity of illness increases with dose
5,000 mSv single dose	Would kill about half those receiving it within a month

SOURCE: WORLD NUCLEAR ASSOCIATION



15 March 2011 Last updated at 11:59 GMT

Radiation fears after Japan blast

บุคลิกของการให้ข้อมูล – ไม่ใช่เรื่องของ
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15 March 2011 Last updated at 11:09 GMT



'Radiation' text message is fake

A fake text message warning people that radiation from the Fukushima nuclear plant has leaked beyond Japan has been panicking people across Asia.

The text message, purporting to come from the BBC, has been circulating around Asian countries since Monday.

It warns people to take necessary precautions against possible effects of radiation.

The BBC has issued no such flash but it has caused particular panic in the Philippines.

Some media reports suggest that workers and sent home after the rumours began to spread, government to issue an official denial.

Disasters such as that currently unfolding in Japan, scam e-mails intended to fool users into downloading malware to spread panic.

The US Computer Emergency Readiness Team has urged computer users to be wary of potential e-mails claiming to be from the BBC.



Radiation at the Fukushima Daiichi nuclear plant has reached harmful levels.



Porntiwa Daisy Leedhirakul

Urgent BBC Flash News

BBC Flash News: Japan Government confirms radiation leak at Fukushima Nuclear Plants. Asian countries should take necessary precautions. If rain comes, remain indoors first 24 hours. Close doors and windows, Swab neck skin with beta-dine where thyroid area is, radiation hits thyroid first. Take extra precautions, radiation may hit Philippines starting 4 pm (Pinas time) today! PLEASE forward this..

8 hours ago · View Doc · Like · Comment · Subscribe



Porntiwa Daisy Leedhirakul กันไว้ดีกว่า ช่วยบอกเพื่อนๆที่เดินทางในทวีปเอเชียด้วยนะค่ะ สำหรับผู้ที่อยู่ประเทศไทย และมีเครื่องกรองอากาศ ช่วยเปิดเครื่องสักไว้บ้างค่ะ

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การชี้แจงข้อมูลผ่าน Factsheet

The Accident in Fukushima Nuclear Power Plant

For accurate understanding

★ Warittha Wannathong ถึง ฉันทน์, Saharath, กมลภัทร, ทศนีย์

[แสดงรายละเอียด](#) 14 มี.ค. (8 วันที่ผ่านมา)

เรียนคุณสุนทร และพี่ๆค่ะ

เป็ได้ข้อมูลการวิเคราะห์เรื่องนิวเคลียร์ที่ญี่ปุ่นมา เป็นการประเมินเหตุการณ์จากมหาวิทยาลัย
<http://www.iuj.ac.jp/oss/earthquake2011/fukushima.pdf>

ปู่เป้

- แสดงข้อความที่เดียวช่อง -



fukushima.pdf

129 กิโลไบต์ ดู [ดาวน์โหลด](#)

The Accident in Fukushima Nuclear Power Plant

For accurate understanding

Facts

- Nuclear power reactor itself has been deactivated. This means the nuclear reaction has not occurred.
- A part of the fuel in the reactor core has melt down. They have been trying to bring the temperature down by flooding the reactor core with standby liquid and sea water.
- Hydrogen explosion may still occur.

The explosion

- What has occurred is hydrogen explosion.
The fuel was not cooled down properly and the temperature elevated. Due to the high temperature, the metal piping had oxidation reaction, which generated hydrogen. Hydrogen flooded into the building and created an explosion.

IT IS NOT A NUCLEAR EXPLOSION!!

Please keep this in mind.

Conclusion

- We are safe unless we go near the nuclear power plant.
- Even if we are near the nuclear power plant, there is no problem if we wear mask and long-sleeved shirt, and wash our hands and shirt when coming home from outside.
- We can conclude that it has no effect on Tokyo.
- We can trust the information announced by the Japanese government.

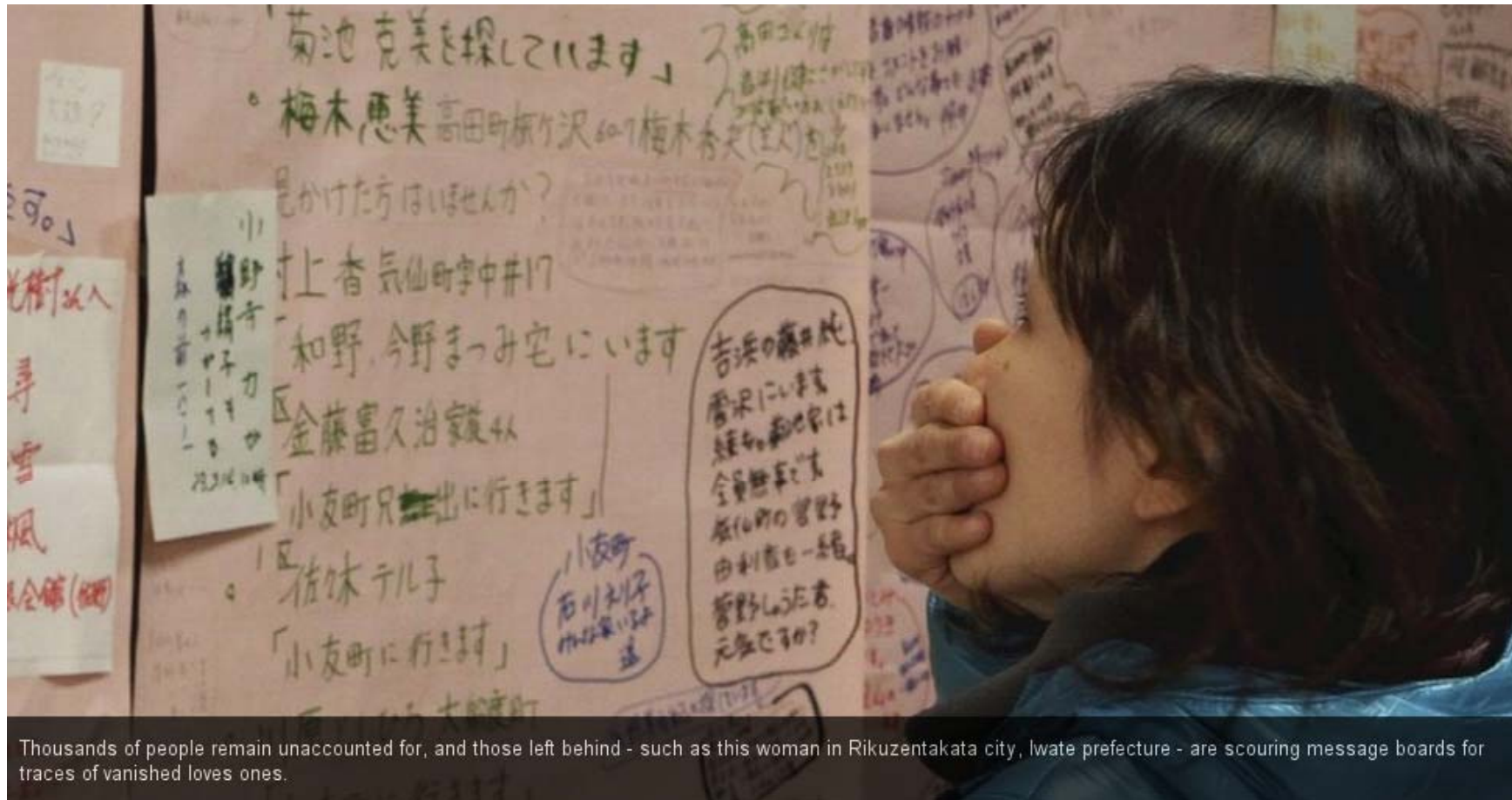
การชี้แจงข้อมูลผ่านการ์ตูน



<http://www.youtube.com/watch?v=dmttd7-QhymI>

ปฏิกริยาทางสังคมของ "คนญี่ปุ่น"

ไม่มีรายงานความเสียหายโดย - ภาพการเสียชีวิต



Thousands of people remain unaccounted for, and those left behind - such as this woman in Rikuzentakata city, Iwate prefecture - are scouring message boards for traces of vanished loved ones.

ระเบียบวินัย -- ทำใจแกร่ง



ยอมรับ...แบ่งปัน และปันส่วน



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15 March 2011 Last updated at 22:25 GMT



Japan earthquake: Tokyo jittery under surface calm

Tokyo was not badly damaged by Friday's earthquake or the tsunami but growing unease over the radiation leaks from the stricken Fukushima nuclear power plant has reached the capital, says the BBC's Roland Buerk in Tokyo.

On the surface the city is still deceptively normal.

The usual man is behind the till at the convenience store where I buy my daily paper, still giving a cheery hello.

I bumped into my neighbour last night, coming home from work, late in the evening as usual from his job at the bank.



Tokyo's usual bright lights have been dimmed because of power shortages

**Japan
Earthquake**

ปฏิบัติตามกติกาและเงื่อนไข



Yoko Kanno



Kimi de ite, Buji de ite - InoueXYoko - Pray For Japan!

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คนที่ยังมีชีวิตอยู่
แล้ว ยังจะไป
ลดทอนบางส่วน
ของความรู้สึกที่มี
ต่อโรงไฟฟ้า
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เพราะเป็น "เรื่อง
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ไม่ใช่เรื่องแบบ
ความรู้ -
rational"

Social Movements & Anti – Nuclear in Japan

After Fukushima

Social media monitoring



Germany : After Fukushima



Anti nuclear demonstrators march in Cologne, western Germany Saturday March 26, 2011 to protest against nuclear power. Poster in front reads: Fukushima warns: Pull the Plug on all Nuclear Power Plants. White banner behind reads : 'Solidarity with the people in Japan'. Some 200,000 people turned out in Germany's largest cities on Saturday to protest against the use of nuclear power in the wake of Japan's Fukushima reactor disaster, police and organizers said.

Spain : After Fukushima



<http://www.demotix.com/news/627356/madrid-protest-against-nuclear-power-stations>

The Ecologistas en Acción organised a protest in Puerta del Sol against nuclear energy and as a show of support with Japan. The protesters demanded the closure of nuclear power stations including the one in Garoña, Burgos. Madrid, Spain.

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South Korea



[/crvotome.org/info/nuclear-protest/nuclear-protest.htm](http://crvotome.org/info/nuclear-protest/nuclear-protest.htm)

Taiwan : After Fukushima



www.nrao.info/nuclear-protest/nuclear-protest.htm

Political Action

<http://english.cntv.cn/program/newsupdate/20110411/102821.shtml>



A protester holding a placard marches near the head office of Tokyo Electric Power Company, Inc (TEPCO) during an anti-nuclear rally in Tokyo March 27, 2011.
[Photo/Agencies]



A woman holds a placard which reads, "(We) don't need nuclear power plants" during an anti-nuclear protest in front of Tokyo Electric Power Co. (TEPCO) headquarters in Tokyo April 3, 2011.
REUTERS/Yuriko Nakao