Protracted & Extremely Expensive Decommissioning of Nuclear Reactors at Fukushima No.1

@SSFS8 on 25 Jun. 2021

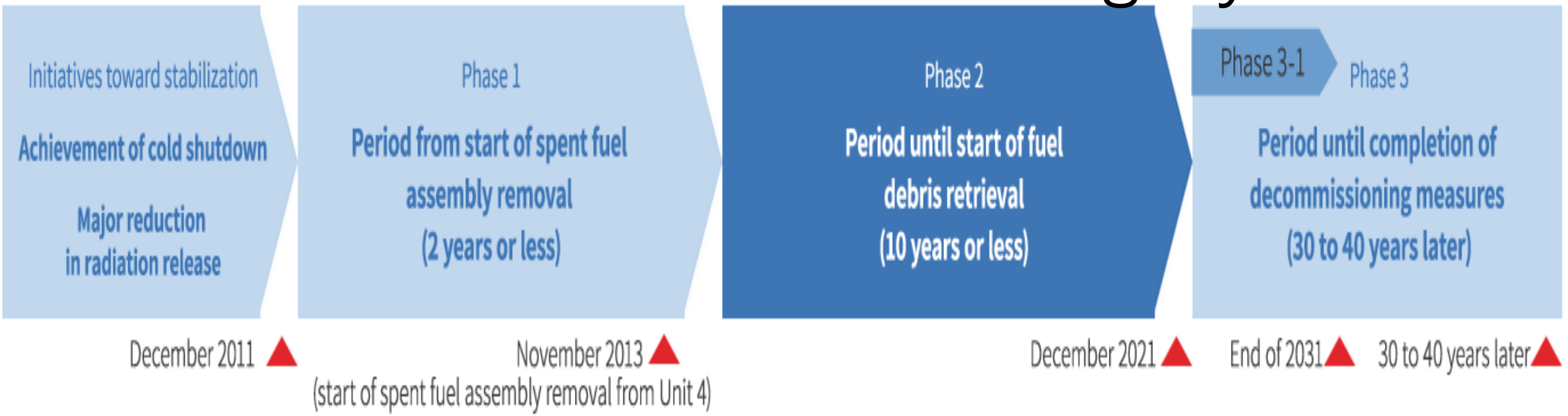
OHASHI Masaaki (大橋正明)

Univ. of the Sacred Heart, Tokyo, JAPAN

1号機側の福島第一原子力発電所ライブカメラ映像

https://www.tepco.co.jp/decommission/progress/about/livecamera/index-j.html

Original Plan of the Decommissioning up to 2051. But it will take much much longer years.

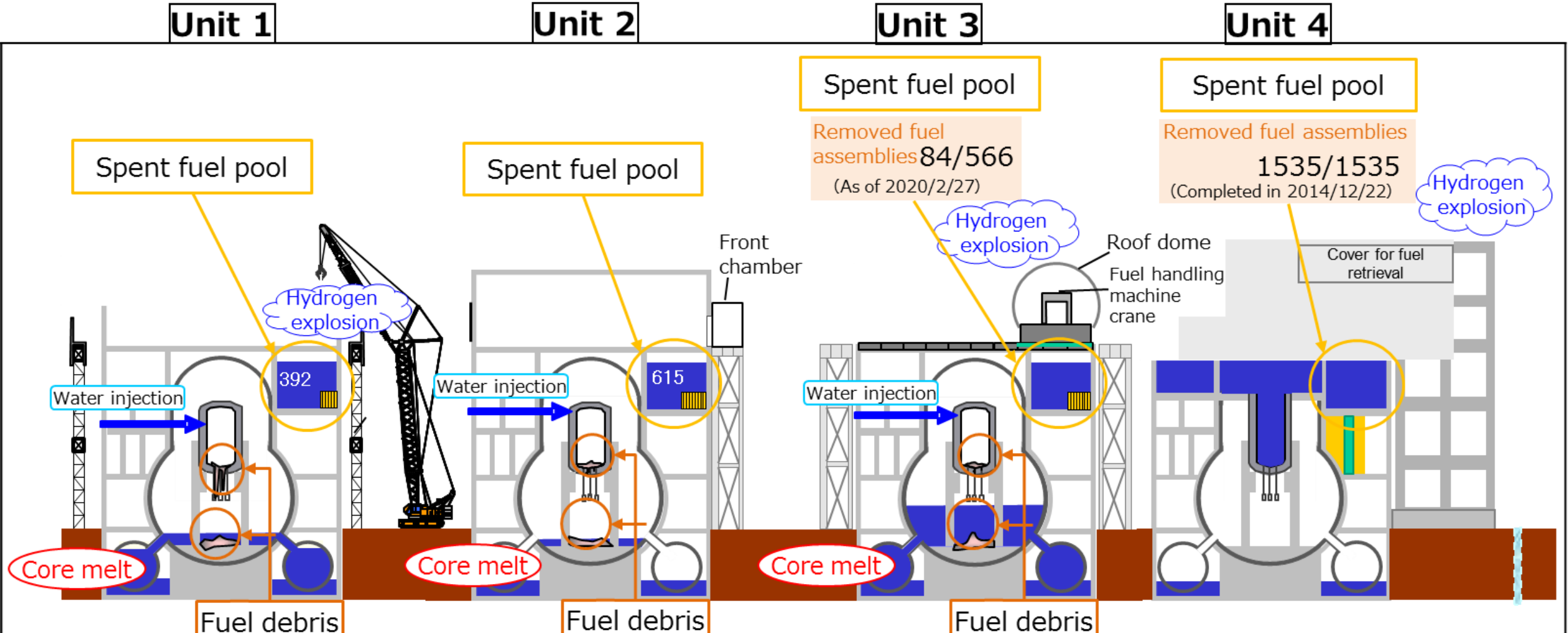


On 28 Feb. 21, TEPCO said that it has removed all 566 nuclear fuel assemblies from the spent fuel pool of the No. 3 reactor at its Fukushima No. 1 plant. The fuel removal operation at the No. 3 reactor began in April 2019. It is the first time that fuel removal has been completed for any of the three reactors that suffered meltdowns in the March 2011 accident at the plant in Fukushima Prefecture. TEPCO aims to finish pulling all fuel assemblies out of other reactor buildings by the end of 2031, including the No. 1 building, where a lot of debris is scattered about, and the No. 2 building, where radiation levels are particularly high. FYI, The removal of 1,533 fuel assemblies from the No. 4 reactor building was completed in December 2014.

https://www.japantimes.co.jp/news/2021/02/28/national/tepco-fukushima-no-1-radiation-3-11-tsunami-earthquakes-fukushima/

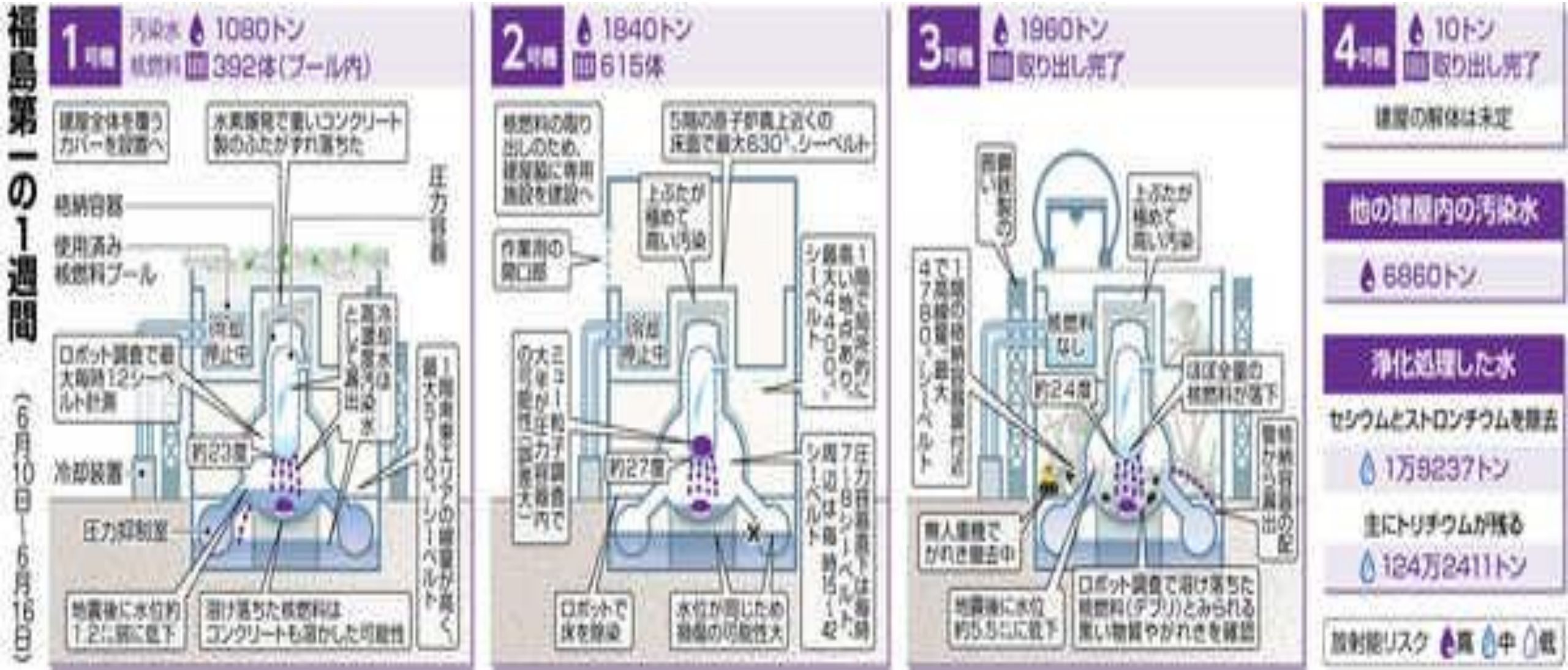
Phase 2: Removal of spent fuel rods from pools: Unit 4 & 3 completed, but Unit 1 & 2 are still on going.

Afraid of a big Earthquake that may damage pools and nuclear fuels rods may tumble down.

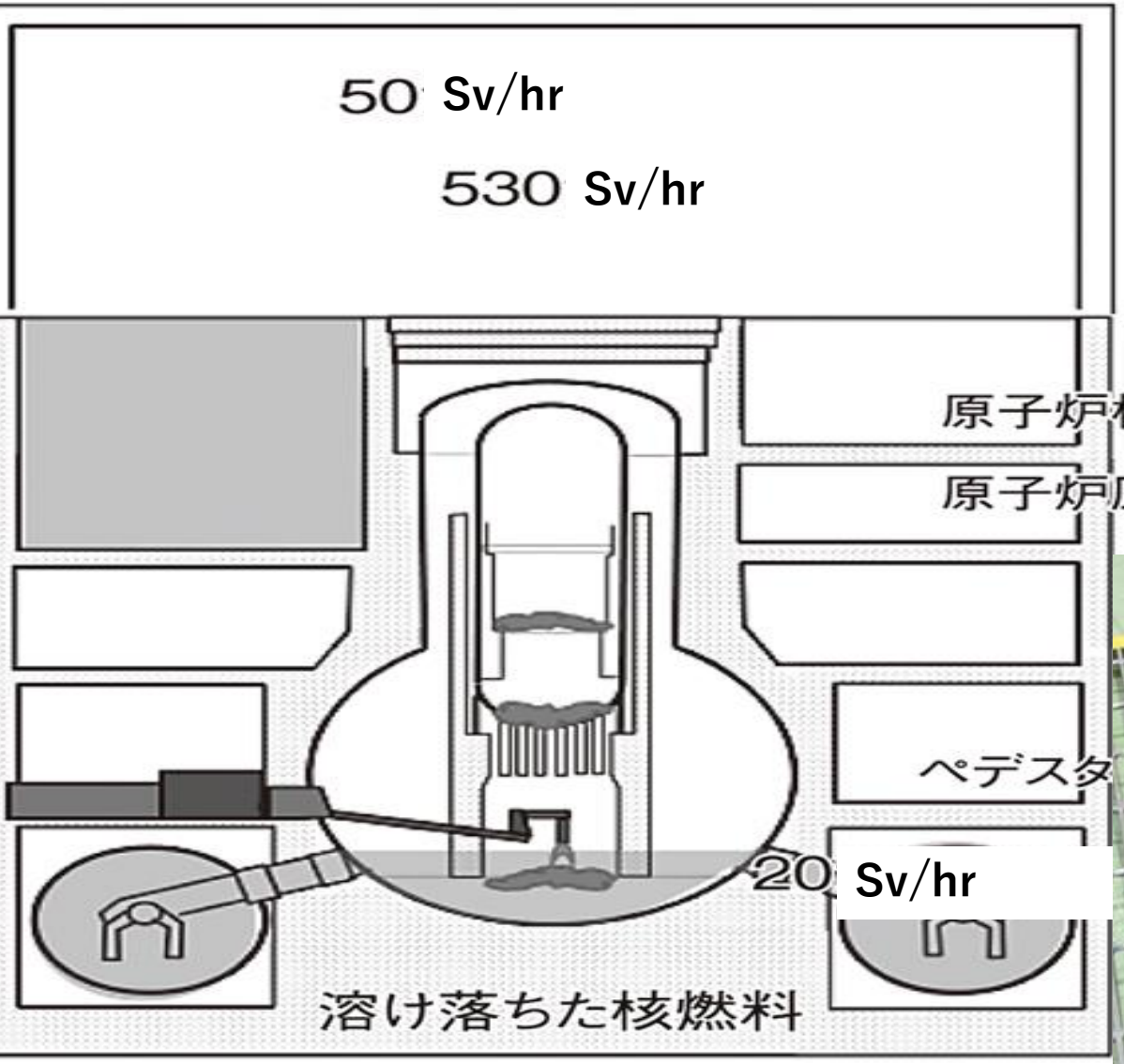


The most recent situation of F1 reactors

from Tokyo Shimbun 東京新聞 https://genpatsu.tokyo-np.co.jp/page/detail/1788



Phase 3: Removal of Fuel Debris from highly contaminated Reactors



10 Sv dose: death for 100% w/i 1~2 week those who receive

100 Sv dose: instant death

As shown left, insides of F1 Reactors are extremely highly contaminated, so no human can go insides. So various robots have been developed.

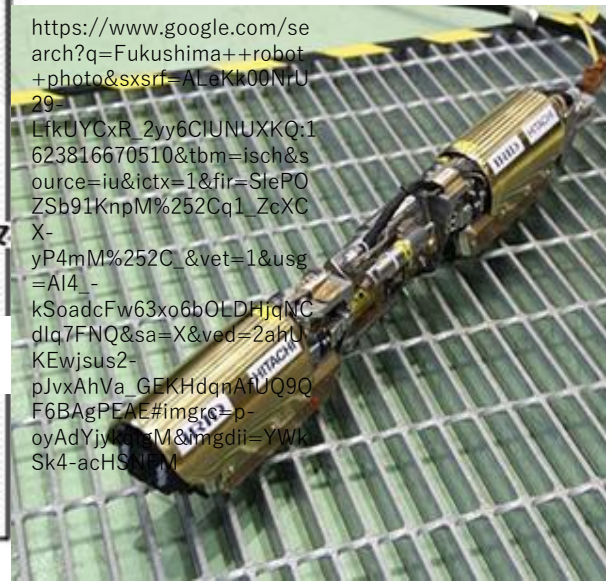
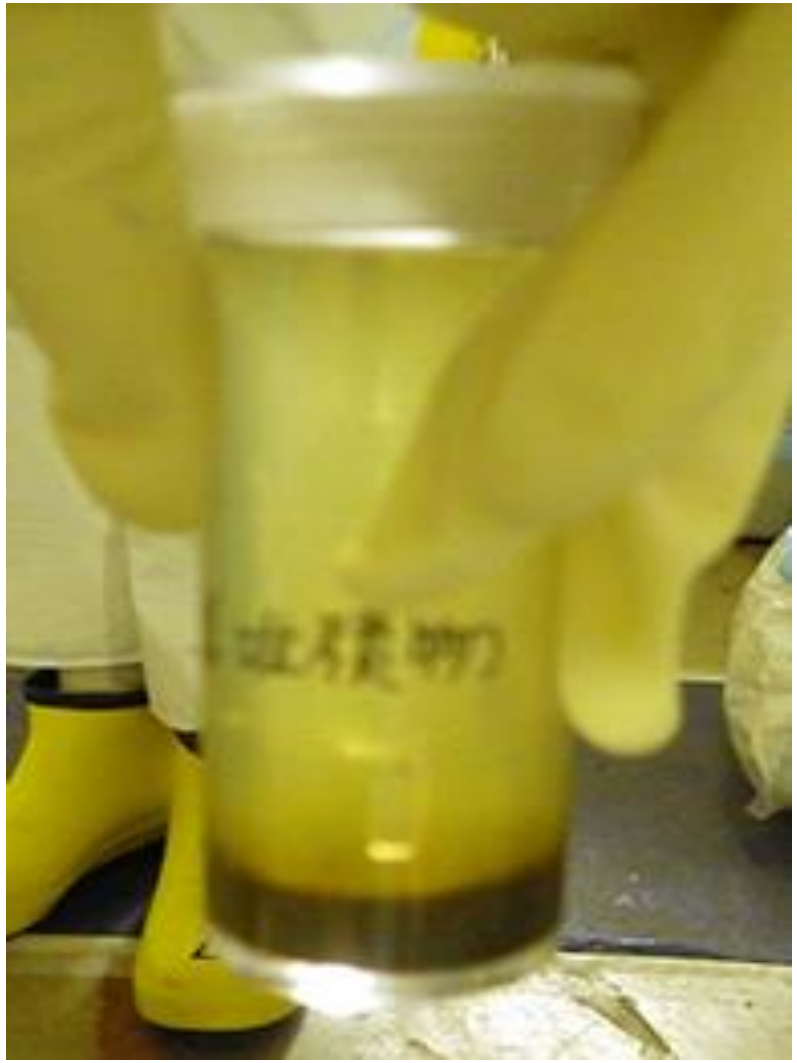


Photo of Unit 3 Reactor inside and collected debris. Long way to start removing debris from reactors.

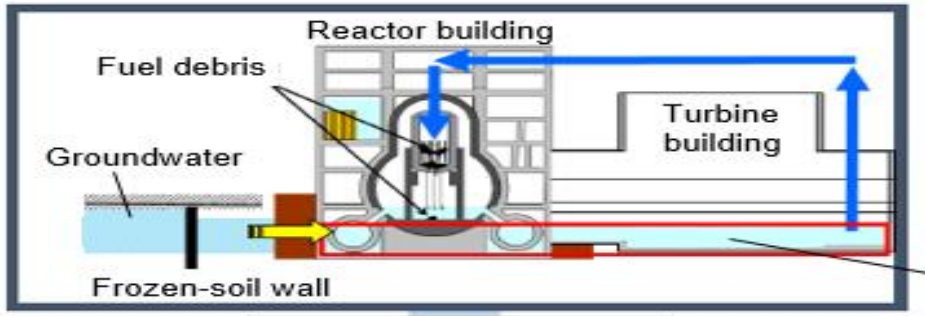
https://photo.tepco.co.jp/cat2/04-j.html



https://photo.tepco.co.jp/date/2017/201704-j/170407-01j.html

https://www.google.com/search?q=%E7%A6%8F%E5%B3%B6+%E6%B1%9A%E6%9F%93%E6%B0%B4+%E3%82%BF%E3%83%B3%E3%82%AF&sxsrf=ALeKk0145xiqH2ex6tWp7PBNnvVc_PIs0A:1623817785756&tbm=isch&source=iu&ictx=1&fir=FDZsXDgINpd32M%252CG47veDUdrExspM%252C_&vet=1&usg=AI4_-kRnJj3VyDnNhWJilggtIu3eztC6mQ&sa=X&ved=2ahUKEwjz1rLSqJvxAhUFE4gKHULRAN0Q9QF6BAggEAE&biw=1280&bih=834#imgrc=FDZsXDgINpd32M&imgdii=fO-wws1OohmieM

Contaminated Water and Tanks:
Water From Reactors and Underground



https://www.enecho.meti.go.jp/en/category/special/article/detail_157.html

Contaminated water inside the buildings

Contaminated water

Removal of cesium and strontium

Sarry

Kurion

Waste

*Kept in temporary storage facilities From the end of 2021, to be moved into a storehouse for large size waste

Desalinated water to be separated

Desalination equipment

Desalinated water to be used for cooling of the reactor core

Strontium-removed water

Storage tanks for strontium-removed water

Contaminated Water : Releasing to Sea, and Voices against it

The Mainichi
Japan's National Daily Since 1922

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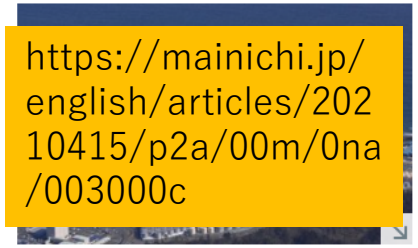
Fishermen voice distrust, worry over gov't decision to release Fukushima plant water

April 15, 2021 (Mainichi Japan)

Japanese versio

https://mainichi.jp/english/articles/20210415/p2a/00m/0na/003000c



This aerial photo taken from a Mainichi Shimbun helicopter shows wastewater tanks at Tokyo Electric Power Company Holdings Inc.'s Fukushima Daiichi Nuclear Power Station on Feb. 13, 2021. (Mainichi/Koichiro Tezuka)

FUKUSHIMA -- Fishermen and workers in the marine product processing industry have expressed anger and concern following the Japanese government's decision to release treated radioactive wastewater from Fukushima Daiichi Nuclear Power Station into the sea.

Minister of Economy, Trade and Industry Hiroshi Kajiyama met with Tetsu Nozaki, president of the Fukushima Prefectural Federation of Fisheries Co-operative Associations, and sought understanding for the national government's decision. However, Nozaki expressed his objections as a representative of fishermen in Fukushima.

Takeshi Takano, 70, a fisherman at Ukedo fishing port in the Fukushima prefecture town of Namie, and a member of the Namie Municipal Assembly, said, "I get the

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Japan plans to release Fukushima's wastewater into the ocean

By Dennis Normile | Apr. 13, 2021 , 10:25 AM

Japan announced today it will release 1.25 million tons of treated wastewater contaminated by the wrecked Fukushima Daiichi Nuclear Power Plant into the Pacific Ocean. The government said it is the best way to deal with tritium and trace amounts of other radionuclides in the water.

"Releasing the treated water into the sea is a realistic solution," Prime Minister Yoshihide Suga said at a Cabinet meeting endorsing the plan. "We will do our utmost to keep the water far above safety standards." A Japanese government official later clarified that details of the release need to be worked out and approved. Gradual, trial releases could start in 2 years and might take 40 years to complete.

Industry groups and nuclear scientists say other nuclear plants have disposed of wastewater this way with minimal impacts. But environmental groups, fisheries organizations, and neighboring countries immediately condemned the decision, citing the vast amounts involved. Marine scientists expressed concerns about the possible impact of the discharge on marine life and on fisheries.

The announcement was **long anticipated**. Three nuclear reactors at the Fukushima plant suffered meltdowns in the wake of an earthquake and tsunami on 11 March 2011. Molten fuel debris burned through steel containment vessels and into the concrete bases of the reactor buildings. Ever since,

https://www.sciencemag.org/news/2021/04/japan-plans-release-fukushima-s-contaminated-water-ocean

30 years

Contaminated Wastes/Ashes in Fukushima, how to dispose?

https://www.google.com/search?q=waste+bag+Fukushima&sxsrf=ALeKk0263_QHgGd8ZU6YqRLz5sYqK87BoA:1623819438043&tbm=isch&source=iu&ictx

https://www.google.com/search?q=%E7%A6%8F%E5%B3%B6+%E7%84%BC%E5%8D%B4%E7%82%89%E3%80%80%E5%86%99%E7%9C%9F&sxsrf=ALeKk01w97zOJd1O_hgCgqnNkc6bEDcpxQ:1623820223591&tbm=isch&source=iu&ictx=1&fir=StxTr3z5HLZ4PM%252CefUhPOGq0y5rTM%252C_&vet=1&usg=AI4_-kQdWzmM3nLG5pzi_HQmg7VnIioLOQ&sa=X&ved=2ahUKEwisr-zcsZvxAhWDPXAKHduZDt4Q9QF6BAgPEAE#imgrc=StxTr3z5HLZ4PM

Total Cost for Decommissioning

- In 16, GoJ estimated the total cost as 22 trillion Yen (200 billion $, 1兆3553億人民元)
- In 21, a Think-tank in Tokyo estimates 81 trillion Yen (764 billion $, 4兆7091億人民元)
- GoJ's annual budget for FY 2021 is 101trillion Yen.
- China's 21 military budget is 1.3553 trillion CNY(22 trillion Yen)
- TEPCO's annual income in 19 was 1. 35 trillion Yen

Still a nuclear power generation is cheaper than other ways???

Long way to eliminate all Nuclear Power Station in Japan

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Court orders a halt to operation of Tokai No. 2 nuclear plant

THE ASAHI SHIMBUN
March 18, 2021 at 18:55 JST

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Japan Atomic Power Co.'s Tokai No. 2 nuclear power plant in Tokai, Ibaraki Prefecture (Hiroki Endo)

MITO--The Mito District Court on March 18 ordered the suspension of the aging Tokai No. nuclear power plant, delivering a victory to a group of 224 plaintiffs who sought the

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Nuclear Power in Japan

(Updated May 2021)

- Japan needs to import about 90% of its energy requirements.
- Its first commercial nuclear power reactor began operating in mid-1966, and nuclear energy has been a national strategic priority since 1973. This came under review following the 2011 Fukushima accident but has been confirmed.
- Up until 2011, Japan was generating some 30% of electricity from its reactors and this was expected to increase to at least 40% by 2017. The plan is now for at least 20% by 2030, from a depleted fleet.
- The first two reactors restarted in August and October 2015, with a further seven having restarted since. 16 reactors are currently in the process of restart approval.

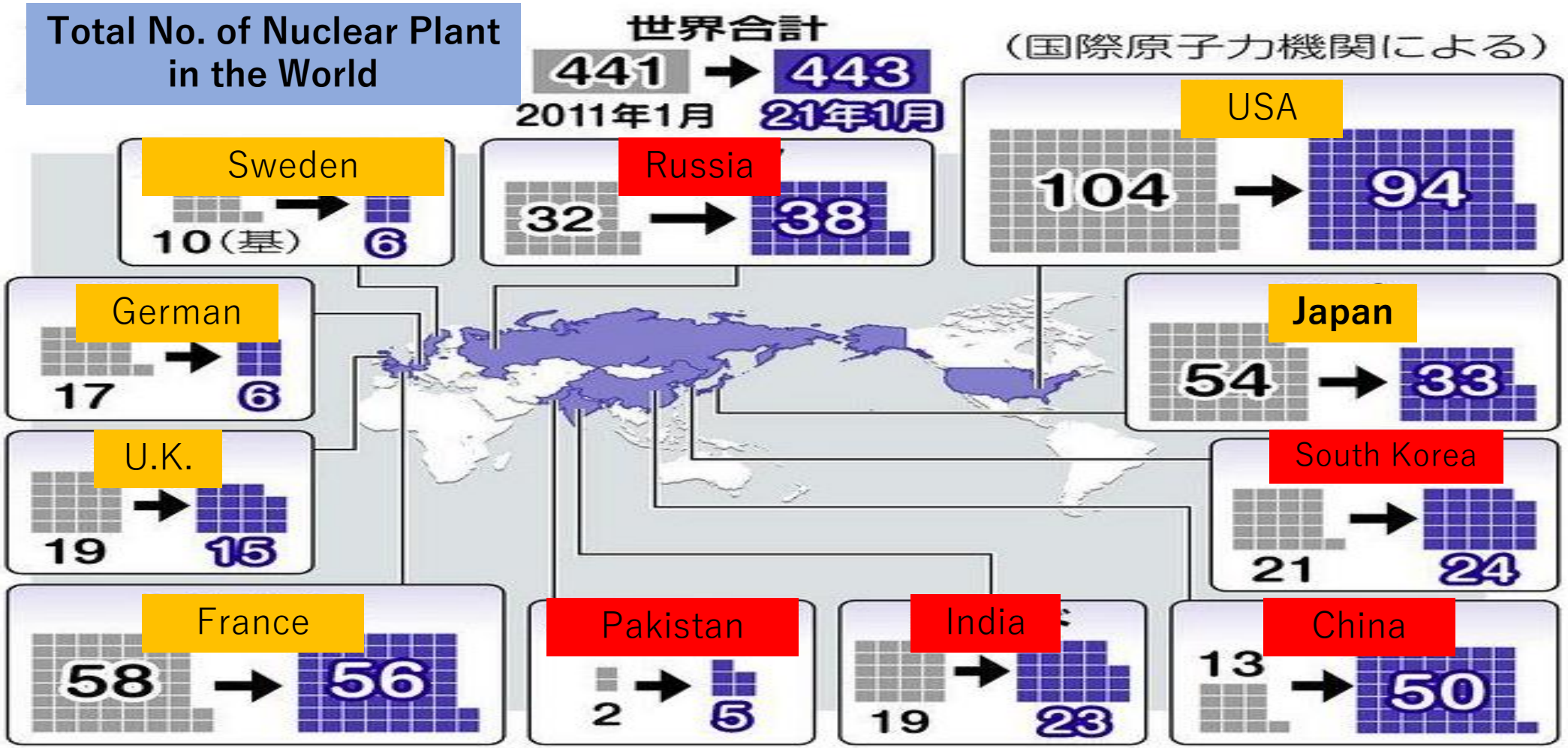
Operable Reactors	Reactors Under Construction	Reactors Shutdown
33	2	27
31,679 MWe	2,653 MWe	17,128 MWe

Good News & Bad News

- TEPCO began decommissioning the Fukushima No. 2 nuclear power plant in Fukushima Pref. on June 23, 2021, aiming to complete the work in fiscal 2064.(**43 Years**!)
- the No. 2 plant have been suspended since it was inundated by the tsunami in 2011.
- The total cost of scrapping the No. 2 plant, including reprocessing spent nuclear fuel, estimated at 410 billion yen ($3.70 billion).
- Now 10 reactors in Fukushima/ Japan are decommissioning, but no idea where the spent fuel rods stored.

- Japan's Kansai Electric Power Co. Inc. has restarted the No. 3 reactor at its Mihama nuclear power plant in western Japan on Wednesday.
- The 826-megawatt reactor is the oldest to be restarted since the 2011 Fukushima disaster and needed special approval to have its lifetime extended beyond the standard 40-year limit (now 44 years old, but 20years more).
- With the restart, Japan has 8 operating nuclear reactors. Many reactors (25) are still going through a re-licensing process under the latest safety standards imposed after the disaster.

No. of Nuclear Power Plants decreasing in US, Europe and Japan, increasing China, India, Russian, Pakistan and Korea

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