UK Nuclear Academics Meeting

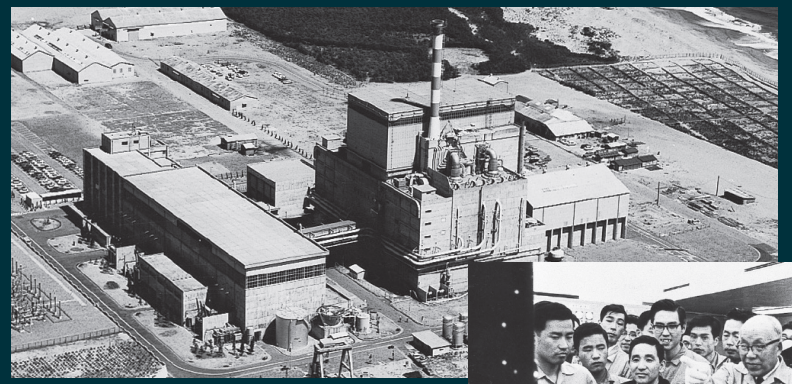
Collaboration with Japan

12th September 2019

Roger Cowton, Head of External Affairs

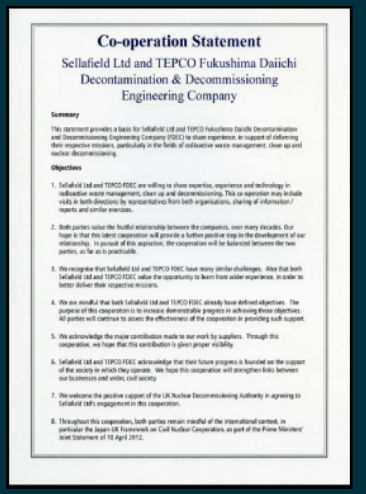
Sellafield and Japan

- 1950's and 1960'd
  - Tokai Unit 1 built using designs from UK Magnox reactors
  - Training of reactor operators at Sellafield
  - Fuel manufacture at Springfields
  - Spent fuel transport by James Fisher from Whitehaven, Workington and Barrow
- 1970s to 1990's
  - BNFL announces plans to build THORP
  - Significant Japanese investment behind the project based on their own domestic plans to expand nuclear power production
  - First overseas reprocessing contracts signed in 1978
  - Pacific Nuclear Transport Ltd (PNTL) develops to transport fuel around the world. This includes ships built in Japan.
- 1990's onwards
  - Reprocessing of Japanese fuel now carried out in THORP
  - Safe and secure storage of plutonium
  - Vitrification of high level waste and return to Japan's Rokkasho Mura facility
  - Evaporator technology delivery to Rokkasho Mura including significant deployment of Sellafield staff
  - Significant investment in the Sellafield MOX Plant (SMP) and MOX fuel contracts signed intending to supply to a number of reactor operators



Sellafield TEPCO Cooperation Agreement

- Non commercial agreement
  - Not intended to be a substitute for commercial arrangements between UK and Japanese organisations.
- First signed in May 2014, with formal contract in Sept 2014
- Topics covered by the Agreement
  - Site Management
  - Radiation Protection
  - Environmental Management
  - Stakeholder Engagement
  - Project Management
  - Design Engineering
- Secondee from TEPCO based at Sellafield
- Delivering real benefit to UK and Japan



Co-operation Statement

Sellafield Ltd and TEPCO Fukushima Daiichi Decontamination & Decommissioning Engineering Company

In Witness Whereof Sellafield Ltd and TEPCO FDEC have signed this Co-operation Statement in good faith and expectation of formal arrangements being executed in due course.

For: Sellafield Ltd

By:

Name: Tony Price

Title: Managing Director

Date: 1st May 2014

FOR: TEPCO Fukushima Daiichi Decontamination and Decommissioning Engineering Company

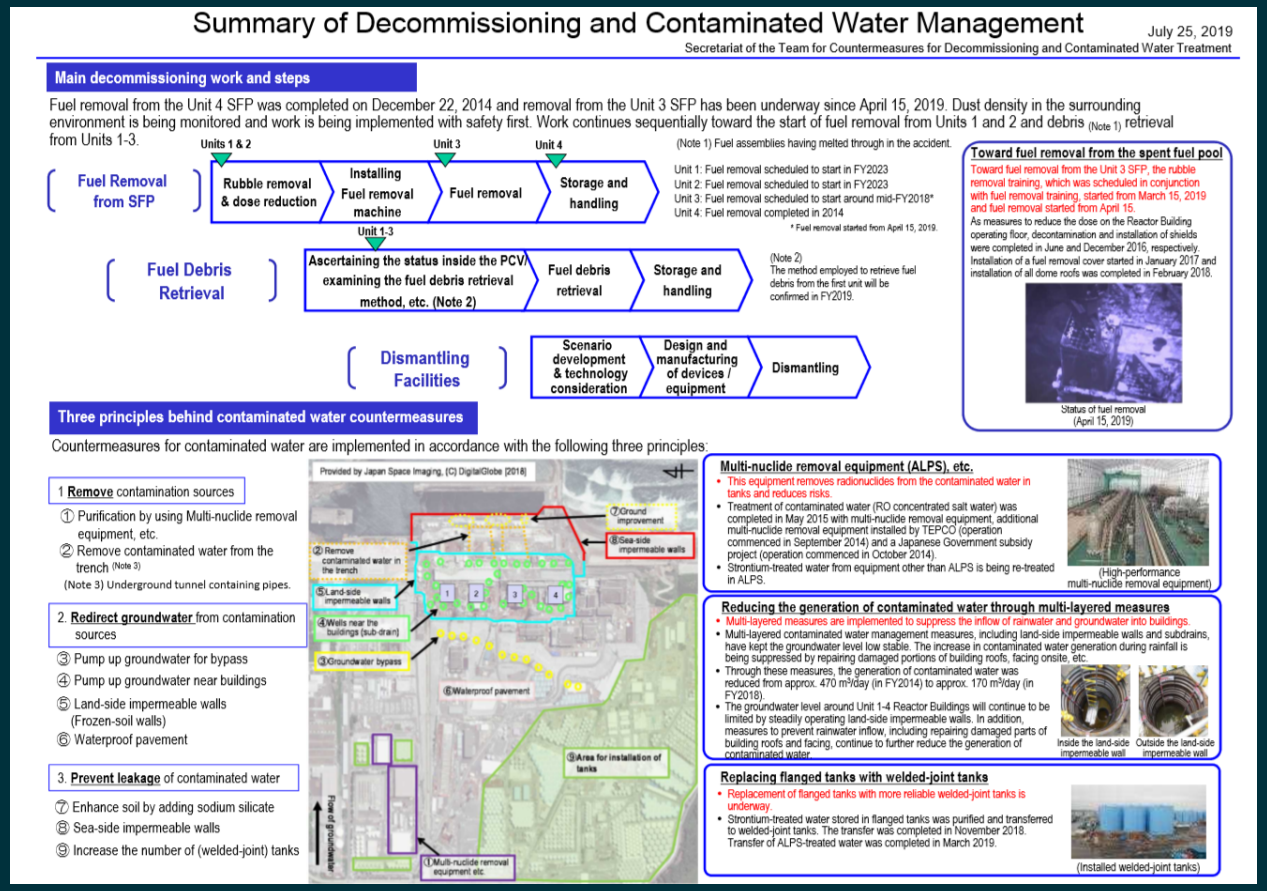
By:

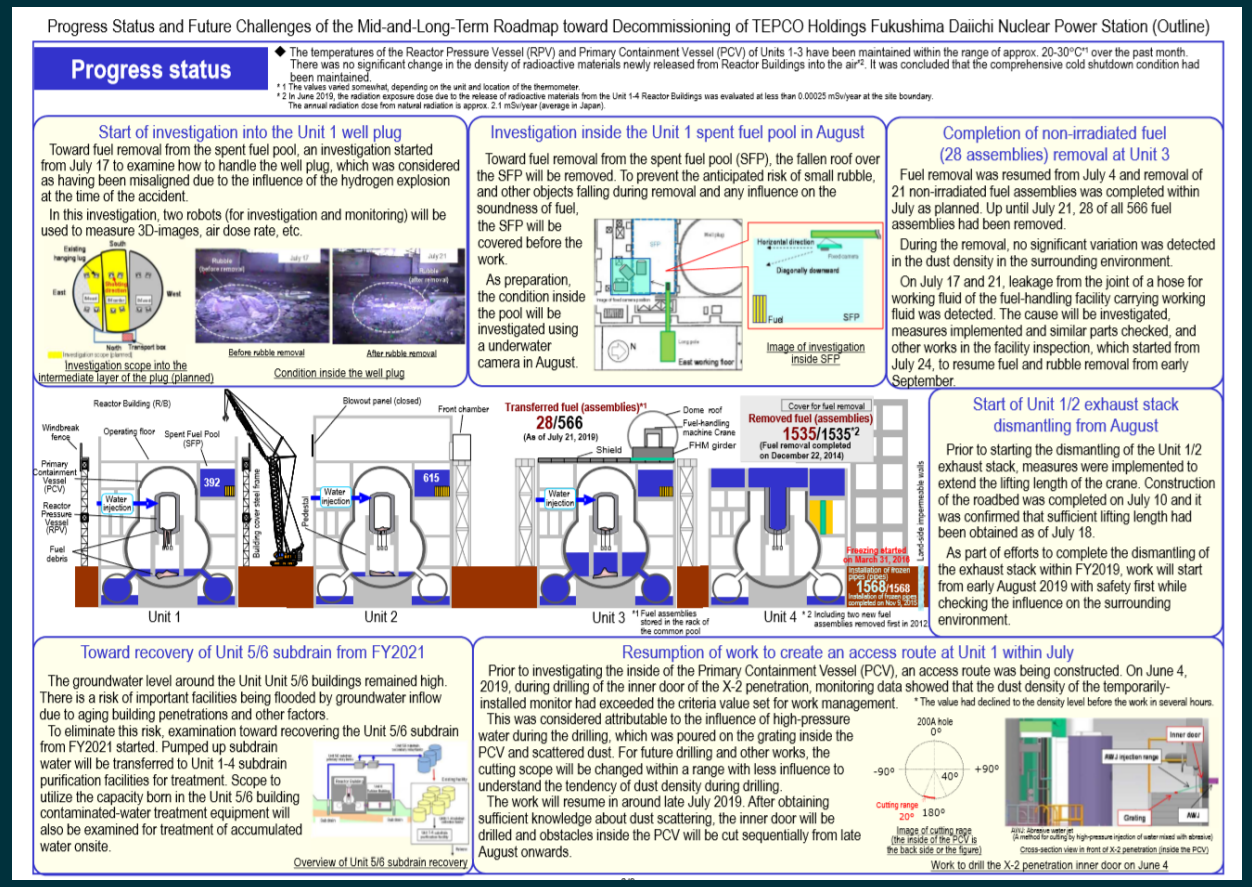
Name: Naohiro Masuda

Title: Managing Executive Officer, President and Chief Decommissioning Officer

Date: 1 May 2014

Decommissioning status – Fukushima Daiichi



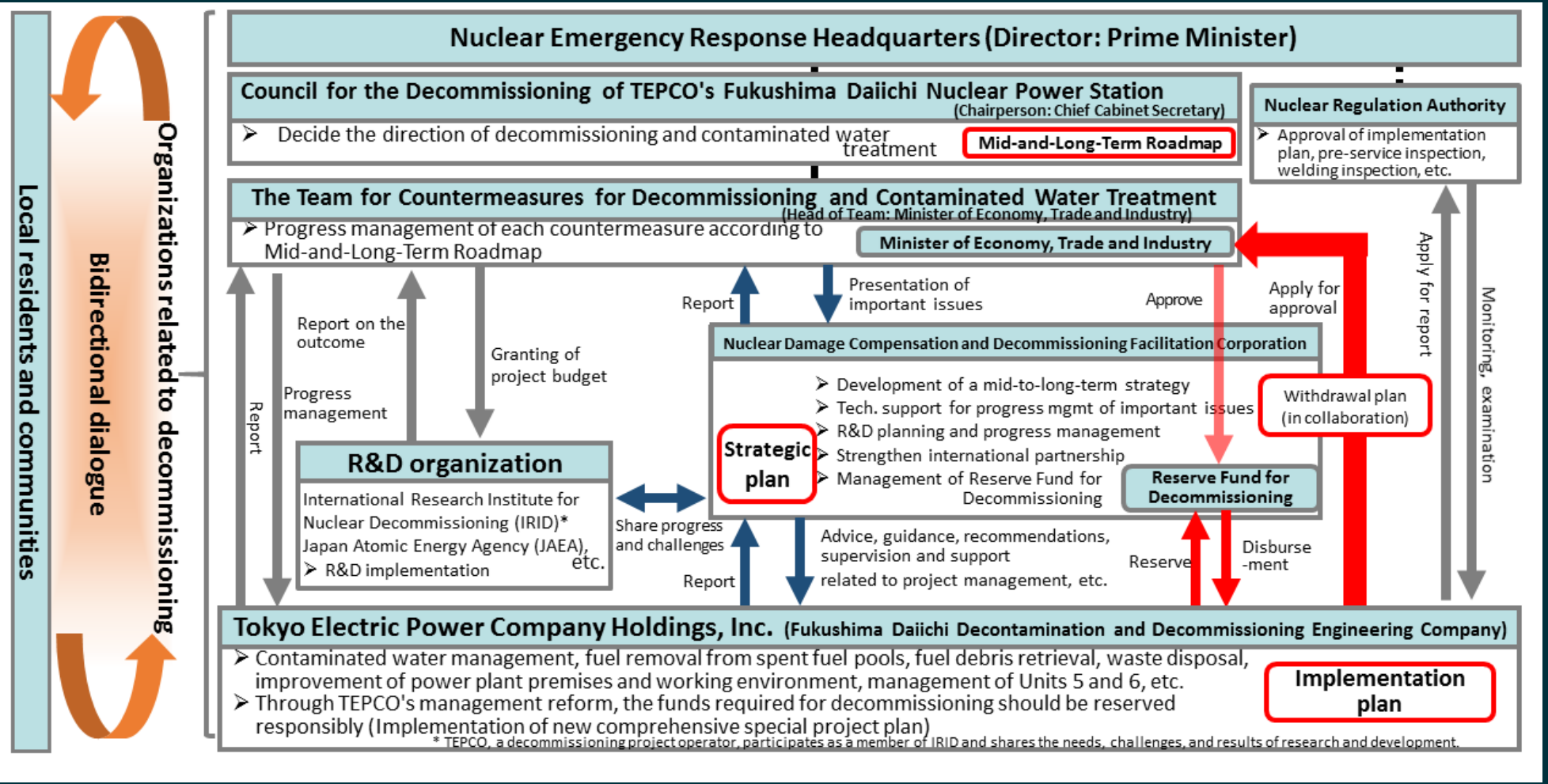


For more information - https://www7.tepco.co.jp/responsibility/index-e.html

Decommissioning elsewhere

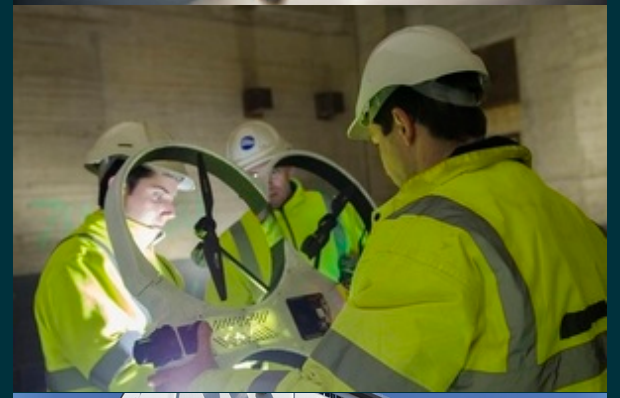
- Other Utilities – normal decommissioning
  - 15 reactors in decommissioning or permanent shutdown (https://www.jaif.or.jp/en/npps-in-japan/)
  - This list will only get bigger (e.g. Fukushima Daini (4 units) and Kashiwasaki Kariwa (5 units)
- JAEA (https://www.jaea.go.jp/english/)
  - Over 35 facilities identified for decommissioning
  - Monju Fast Breeder Reactor
    - Team UK
  - Tokai HAS
    - NNL leading small assessment packages using skills and experience of UK SME's
  - Sellafield representation on the Advisory Panel for Tokai Reprocessing Plant

It is complicated



R&D successes and opportunities

- Avexis
  - Developed for initial use at Sellafield by University of Manchester and Forth Engineering.
- N-Visage/RISER
  - Developed by Createc and Blue Bear and trialled at Sellafield and in use at Fukushima Daiichi
- CLADS (Collaborative Laboratory Advancing Decommissioning Science) (https://fukushima.jaea.go.jp/en/hairo/)
  - Purpose built facility in Naraha (close to Fukushima Daiichi) (https://naraha.jaea.go.jp/en/index.html)
- National Institute for Technology, Fukushima College (http://www.fukushima-nct.ac.jp/en/)
- TEPCO have a challenges portal called CUUSOO – Open Innovation Programme (https://tepco.cuusoo.com/#about)
- JNFL Rokkasho Mura



Closing comments

- Japan campaign group looking at business opportunities
- The Japanese business model is quite different to the UK model takes time to understand
- It takes time to build a strong relationship but once in place it lasts a long time
- Demonstrating delivery is much more powerful than talking in general terms

Other information

- What is Sellafield
  - https://youtu.be/1ZwKnYWo_nQ
- Inside Fukushima Daiichi
  - https://www4.tepco.co.jp/en/insidefukushimadaiichi/index-e.html
- TEPCO Treated Water Portal Site
  - https://www4.tepco.co.jp/en/decommission/progress/watertreatment/index-e.html
- TEPCO Latest progress video
  - https://www4.tepco.co.jp/en/news/library/archive-e.html?video_uuid=r0viqse1&catid=61795