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Dear Frédéric Patalagoity,

We are once again writing to you to outline our concerns with the production standards, quality control and, ultimately, safety of AREVA plutonium MOX fuel produced for Japanese utilities. As you will be aware we have written to you on two previous occasion this year[1] in regard to MOX fuel use supplied by AREVA and loaded into the Takahama 3&4 and Ikata 3 reactors. Given the planned shipment of another load of plutonium MOX fuel, scheduled for March 2017, we are urging you and your company to respond to concerns by Japanese civil society. As you know the quality control production standards of AREVA are under focus as never before, including here in Japan.

As you will be aware it is fifteen years since the poor quality control and production standards of plutonium MOX fuel was first disclosed in the case of 8 MOX fuel assemblies manufactured by the then British Nuclear Fuels Limited (BNFL) at Sellafield in the UK, and delivered to the Kansai Electric reactor Takahama unit 4 in Fukui prefecture. As a result of our analysis, based on original quality control data that BNFL were forced to disclose publicly at that time, Green Action, Mihama-no-Kai and citizens filed a legal challenge. For two months both Kansai Electric and BNFL denied that the fuel had falsified quality control data. However, in December 1999, one day before the court ruling, Kansai Electric and BNFL were forced to confirm that plutonium MOX fuel to be used in Takahama 4 contained falsified quality control data. As you know the fuel was returned to the UK and scrapped.

In 1999 and 2000 we produced analysis that showed production and quality control standards for MOX fuel produced using the MIMAS method, including at the Cogema/AREVA Melox plant, were actually of a lower standard than used by BNFL.[2] This was used by a legal challenge to the Fukushima District court on behalf of 1000 plaintiffs in challenging the loading of 32 MOX fuel assemblies into the Fukushima Daiichi unit 3 reactor. The MOX fuel was manufactured using the MIMAS method, under a contract between Tokyo Electric and COMMOX[3], of which Cogema was a lead agency. While the judgement of the Fukushima District Court did not uphold the lawsuits complaint, the judgement also made clear that quality control data for the MOX fuel should be publicly disclosed. No such data was released by COMMOX in the intervening years. As a consequence of the doubts and controversy over the safety and quality of MOX fuel, Tokyo Electric were prevented from use of the 32 assemblies of MOX fuel until September 2010, six months prior to the March 2011 disaster.

You will also be aware that 28 MOX assemblies delivered to the Kashiwazaki Kariwa nuclear plant in Niigata in 2001, as a consequence of the controversy over the quality and safety of MOX fuel and the opposition of the people of Kariwa, was not loaded into unit 3 as planned. Nearly 15 years later that plutonium fuel remains unused and stored in the cooling pool at the reactor site.
As AREVA sought to restart its MOX business with Japanese utilities the issue of quality control and production standards persisted. Twelve AREVA MOX fuel assemblies, containing 552kg of plutonium

[1] January 28 and July 21, 2016.
[2] "Lawsuit Against the Use of MOX Fuel at Fukushima I-3", Chihiro Kamisawa, CNIC, January/February 2001, see http://www.cnic.jp/english/newsletter/nit81/articles/fukushima.html; "MOX Production Standards And Quality Control At Belgonucleaire And The Implications For Reactor Safety In Fukushima-1-3" Submission to the Fukushima District Court, Fukushima City, Japan, Frank Barnaby and Shaun Burnie, Greenpeace International, December 26 2000.
[3] Fabricated at Belgonucleaire.

were delivered to the Takahama plant in 2010, eight of which were loaded into unit 3. Our analysis at the time found that there were disagreements between AREVA and Nuclear Fuel Industries Ltd. (the developer and design code verifier of the MOX fuel and contractor acting on behalf of Kansai Electric and other Japanese power companies) specifically over the MOX fuel quality and production standards to be used for the manufacture of Japanese fuel at AREVA's Melox fuel production plant in Marcoule, France, including for Takahama. As a result of AREVA's production problems, and their intransigence, NFI agreed to AREVA's insistence that a lower standard of production and quality control would be used for the production of MOX fuel, including for that produced for Kansai Electric. AREVA failed to publicly provide quality control data at this time when challenged by us in 2010.

As you know the safety implications of MOX fuel use are severe. This is made worse by significant problems with the quality control and production standards that exist at the Melox plant.
The MIMAS production technology used at Melox has multiple problems, including in relation to a fundamental issue for MOX fuel, Thermal Stability. If the plutonium fuel pellets swell under heat alone, and as internal pressure builds up from gaseous fission products, a gas-filled pellet-cladding gap can occur. This has several nuclear safety consequences. Not least that in the event of a loss of coolant accident, the MOX fuel, which may already be fractious, would be further more likely to fragment and "relocate". The heterogeneous fuel structure can also increase the chance that fuel rods will rupture and block coolant channels if a transient occurs, again potentially impacting cooling function of the reactor core. The reactor safety implications of not being able to sufficiently cool the reactor core fuel are obvious, not least from the meltdown of three reactors at Fukushima Daiichi in 2011. This underscores the importance of achieving the highest nuclear fuel production standards, and applying the most rigorous quality control and inspection. Neither of these are possible at the Melox plant.

The thermal stability problem that exists with Melox produced MOX fuel is but one of multiple concerns we have with plans to operate Japanese reactors with AREVA supplied fuel. The fact that five years after delivery of MOX fuel to Takahama, AREVA has made no effort to provide details on their production and quality control standards is unacceptable to the people of Japan. Already subjected to the consequences of the Fukushima Daiichi accident, the people of Japan are now confronted with the risks of restart of the Genkai 3 reactor and risks due to restart of the Ikata 3 reactor, and the possible resumption of operations of the Takahama reactor units 3 and 4, to be operated with 24 assemblies and 4 assemblies of AREVA MOX fuel, all containing AREVA supplied MOX fuel.1,088kg and 184kg of plutonium respectively .

The failure of the Japanese Nuclear Regulation Authority (NRA) to re-assess the risks of MOX fuel use in Japan is deeply regrettable and we have challenged them on this, relying as they do on the reviews conducted by the discredited NISA. At the same time, AREVA as the manufacturer of this substandard product, has a duty to publicly disclose all relevant and original data on the quality control and production standards of its fuel that is about to be used in these Japanese reactors.

. Without a commitment to transparency on this issue, assurances that the fuel is safe to use are meaningless.

It is all the more critical that AREVA release the quality control data for the Takahama MOX fuel both in storage and planned for use in Takahama, and likewise MOX fuel at Ikata 3 and Genkai 3; further we urge to provide all quality control data for the 16 MOX fuel assemblies under production in France, containing around 736kg of plutonium and scheduled for transport to Takahama unit 4 in early 2017. In 2010 the French nuclear safety regulator, ASN, confirmed to Greenpeace France in relation to the fuel then being shipped to Japan for use in Takahama unit 3, that, ***"The ASN is not involved in the quality control of production destined for Japanese utilities."***[4] With neither French or Japanese regulators overseeing MOX fuel standards and quality control there clearly are additional major failures and risks

[4] Jean Christophe Niel, Director-General, ASN, to Yannick Rousselet, Greenpeace France, March 31 2010.

from Kansai Electric's plans to use AREVA MOX fuel. Without a commitment to transparency on this issue, assurances that the plutonium MOX fuel is safe to use are meaningless.

We understand that AREVA have multiple threats and challenges to their future business prospects. Securing additional MOX business with Japanese utilities, including new MOX fuel manufacture, must rank high in your priorities given the 16,000kg of plutonium belonging to Japan currently stored in France.[5] This will require the transport of many hundreds of tons of MOX fuel from France, including that scheduled for 2016. But we would contend that a failure to put safety first and above commercial interests is in no one's interests, including those of AREVA. Given the on-going crisis within the French nuclear industry, including the central role played by your company in the production of substandard major steel components for multiple reactors in France, the lack of even the courtesy to respond to our requests for basic quality control information further undermines your company's already poor reputation.

Conducting a plutonium experiment on the people of Fukui, and Kansai region as well as in Ehime and Saga prefectures and the wider islands of Shikoku and Kyushu, as well as wider Japan, is never acceptable. As we approach the anniversary of the Fukushima Daiichi accident, it is even more reprehensible that AREVA has so far refused to fully disclose all relevant data on its MOX production problems at Melox. We are calling on you to release immediately the actual quality control data for the 30 MOX fuel plutonium MOX assemblies at the Takahama, Ikata, and Genkai reactors, and the 16 MOX fuel assemblies under production for Kansai Electric at Melox.

Yours sincerely,

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[5] The Status of Plutonium Management in Japan, Secretariat of the Atomic Energy Commission Cabinet Office, July 21 2015, http://www.aec.go.jp/jicst/NC/iinkai/teirei/siryo2015/siryo28/siryo3_e.pdf