

**AREVA STEEL SCANDAL ESCALATES
HIGH NUMBER OF EDF OPERATING NUCLEAR REACTORS IN FRANCE AT UNQUANTIFIABLE RISK OF CATASTROPHIC FAILURE**

Paris, 29 September 2016 - Greenpeace France published today the LargeAssociates R3233-A1 Review on the nuclear safety crisis affecting much of the EDF nuclear reactor fleet arising from the AREVA *carbon anomaly* scandal.

The Review examines the Flamanville EPR reactor pressure vessel components now acknowledged by AREVA to be flawed, significant as this is alone, it led LargeAssociates to explore the steam generators (large, pod-like boilers) installed at EDF **operational** nuclear power plants (NPPs) across France.

After several months of investigation, the Review findings revealed the gravity of the situation: Like the defective Flamanville components, crucial parts of the operational steam generators were manufactured at AREVA's le Creusot Forge with a total of 28 NPPs affected by the crisis, including at least 18 EDF NPPs classified as operating at risk of major accident due to carbon anomalies. The nature of the flaw in the steel, an excess of carbon, reduces steel toughness and renders the components vulnerable to fast fracture and catastrophic failure putting the NPP at risk of a major radioactive release to the environment.

During the course of investigation, LargeAssociates obtained documents from IRSN (the independent French *Institut de radioprotection et de sûreté nucléaire*) that reject AREVA/EdF's assurances that there is no safety risk from steam generators containing the excess carbon flaw. In August 2016, IRSN warned the French nuclear safety regulator *Autorité de sûreté nucléaire* (ASN) that EdF's submission was incomplete; that there was risk of abrupt rupture which could lead to a reactor core fuel melt; and that immediate '*compensatory*' measures need to be put in place to safeguard the operational NPPs involved.

"As a result of AREVA's failures, a significant share of the French nuclear reactor fleet is at increased risk of severe radiological accident, including fuel core meltdown," said John Large of LargeAssociates. *"However, there is no simple or quick fix to this problem. The testing and inspection regime currently underway by AREVA and EdF is incapable of detecting the extent and severity of the carbon problem and, moreover, it cannot ensure against the risk of rapid component failure. It is most certain that the IRSN finding will equally apply to replacement steam generators exported by AREVA to overseas nuclear power plants around the world,"* said Large.

The Review shows that the reactor pressure vessel of the Flamanville EPR, which is already installed, does not have a *Certificate of Conformity* issued by ASN. This means that it does not comply with the *European Directive on Pressure Equipment* and does not meet the mandatory requirement of ASN, which since 2008, stipulates that any new nuclear reactor coolant circuit component has to have a *Certificate of Conformity* before production of that component commences.

"Without a Certificate of Conformity the reactor pressure vessel and steam generators currently installed in Flamanville 3 will almost certainly have to be scrapped" said Roger Spautz, responsible for nuclear campaign at Greenpeace France.

The LargeAssociates review reveals evidence that at the Creusot Forge plant, AREVA did not have the technical qualifications required to meet exacting nuclear safety standards. The plant was not under effective control and therefore had not mastered the necessary procedures for maintaining the exacting standards for quality control in the manufacture of safety-critical nuclear components – AREVA has now acknowledged that the quality controls at le Creusot Forge were mainly responsible for the flaws in the Flamanville 3 NPP and the operational NPPs and that the insufficiencies behind can be traced back to 1965. Moreover, ASN has indicated that in the nuclear components supply chain three examples of *Counterfeit, Fraudulent and Substandard Items* (CFSI) have occurred in the year ending 2015.

The recent ASN publication (24 September 2016) of a list of the NPPs affected by the AREVA anomalies and *irregularities* demonstrates that the phenomenon not only has reached alarming proportions but is continuing to grow under scrutiny. The number of components affected by *irregularities* and installed in NPPs in operation increased by 50 in April 2016 to to 83 by 24 September this year and, similarly, *irregularities* affecting the Flamanville EPR increased from 2 to 20.

The LargeAssociates Review relates these developments in France to the currently operating Sizewell B NPP in Suffolk, UK and the now contracted construction programme for the Hinkley Point C NPP: For Sizewell B which included le Creusot sourced components, it is considered that the *Office for Nuclear Regulation* (ONR) did not delve deep enough into the situation as now revealed by ASN. For Hinkley Point C, now that ASN has deprioritized efforts on the under-construction Flamanville 3 NPP because of its pressing urgency to evaluate the risk situation for the operating NPPs, there is a greater likelihood that Flamanville 3 will not reach the deadline for operation and validation of its technology by the UK Credit Guarantee cut-off date of December 2020.

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