

Part 11F — Supplemental Information in Support of
10 CFR Part 70 Special Nuclear Material License Application

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Non-Fuel Special Nuclear Material for Use in Each AP1000 Unit

In accordance with the regulatory requirements of 10 CFR 70.22(a)(4), each application for a 10 CFR Part 70 Special Nuclear Material (SNM) License shall include the name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material the applicant proposes to use or produce. The radioactive material identified below represents nominal values of known non-fuel special nuclear material specifically required for use in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%) 234, 236 & 238 (approx. 7%) 233 (trace amounts)	Intermediate Range Neutron Detectors - Fission Chambers (5 detectors, including 1 spare)	4.99 grams of Uranium per fission chamber Five fission chambers – total of approx. 25 grams

Additionally, the AP1000 DCD identifies some components that may contain Part 70 special nuclear material as an alternate to the planned material for those components. Specifically, DCD Section 4.2.2.3.4 identifies that the primary source rods contain capsules of californium source material, with plutonium-beryllium as an alternate source material. Also, the source range neutron detectors are currently planned to be BF₃ proportional counters, but an alternate future design may use fission chambers for the source range detectors; thereby resulting in a total amount of SNM for the intermediate and source range detectors that would be twice the amount of SNM as the currently designed intermediate range detectors. The radioactive material identified below represents the alternative materials that may be used in each AP1000 unit:

(a) Element and Mass Number	(b) Chemical or Physical Form	(c) Maximum Amount
Uranium 235 (approx. 93%)	Source Range Neutron Detectors - Fission Chambers Alternate design may use fission chamber design for source range detectors. The additional material identified here is for the source range detectors. (5 detectors, including 1 spare)	Approx. 5 grams of additional Uranium per fission chamber Five fission chambers – total of approx. 25 grams additional
Plutonium 238 (> 80%)	Primary Source Rods (2) (One PuBe alloy source rods per assembly; two assemblies per reactor)	Approx. 15 grams of Plutonium per source assembly – total of approx. 30 grams

The details relating to the alternate SNM components include assumed values based on previous designs, and have not been designed specifically for the AP1000 units.

Leak-Testing:

FSAR Section 12.2 includes the requirements for written procedures that address leak-testing of radioactive sources (byproduct material, source material, and devices that contain SNM, as appropriate). The leak-test will be consistent with 10 CFR 20.1501 survey and monitoring requirements for evaluating the quantities of radioactive material and the potential radiological hazard of the radioactive source.