Fact Sheet on Naval Used Nuclear Fuel

The Naval Nuclear Propulsion Program's (NNPP) statutes, 10 U.S.C. §§ 6102 and 50 U.S.C. §§ 2406, including codification of Presidential Executive Order 12344, set forth the Program's total responsibility for all aspects of the Navy's nuclear propulsion, including research, design, construction, testing, operation, maintenance, and ultimate disposition of naval nuclear propulsion plants. The NNPP's responsibilities includes all related facilities, radiological controls, environmental safety, and health matters. Consistent with these responsibilities, the NNPP maintains the facilities, equipment, and procedures necessary to safely manage, examine, process, and package naval used nuclear fuel (UNF) for road-ready dry storage and eventual disposal in a federal geologic repository.

- The design of naval fuel is classified and must be protected throughout its lifecycle.
- As of April 2026, the total amount of naval UNF is about 42 metric tons heavy metal (MTHM)
- The heavy metal is approximately 99% uranium and approximately 1% transuranic isotopes.
- Naval UNF contains highly enriched uranium (approximate assay of 75% U^{235}). Fuel loading, assay, and other features vary from fuel assembly to fuel assembly.
- Most of the non-fissile uranium in naval UNF is U^{236}.
- The inventory of naval UNF includes a wide variety of fuel assembly configurations.
- Naval fuel assemblies are solid metal with weights ranging from a few hundred pounds to over a ton. Almost all of this weight is structural, non-fuel, material (e.g., zircaloy).
- As a result of ongoing defueling and refueling of naval reactors, the NNPP is projected to generate 1 MTHM of naval UNF per year on average.
- Naval UNF is transported from shipyards by rail to the Naval Reactors Facility (NRF) on the Idaho National Laboratory for examination, processing, and packaging for final disposition.
- More than 80% of the naval UNF at NRF has been packaged into sealed stainless-steel canisters suitable for transportation and geologic disposal.
- Naval UNF canisters are 66 inches in diameter and come in two sizes for height: 210.5 inches (long) and 185.5 inches (short). As of April 2026, the NNPP is loading its 214^{th} canister.
- Canister fuel loading varies. On average, each canister contains about 0.15 MTHM.
- Total allowable canister cargo weight ranges from 35,000-75,000 lbs. This weight includes the baskets and spacers needed to keep the fuel from moving within the canister.
- The maximum weight of a loaded canister ranges from 76,000 lbs. to 93,000 lbs.
- Loaded canisters are stored in reinforced concrete overpacks, which have a 155-inch outer diameter, come in two heights (242.2 inches, 217.5 inches), and weigh roughly 350,000 lbs (empty).
- The NNPP maintains equipment (crawlers, air pallets) to move loaded overpacks within NRF.

- The NNPP has built and maintained the facilities needed to transfer canisters from concrete overpacks to a shielded metal cask for rail transport to a receiving facility.
- The M-290 shipping container is the shielded metal cask planned for rail transport of naval UNF from NRF; the max loaded weight of the M-290 shipping container is about 522,000 lbs.
- Equipment to unload naval UNF from the canisters exists, including equipment to open a canister and the grapples used to pick up the various fuel items

Additional details regarding naval UNF can be found in the Yucca Mountain Safety Analysis Report (DOE/RW-0573, Rev. 0), Section 1.5.1.4 (Naval Spent Fuel) and Table 1.5.1-32 (Radionuclide Inventory for a Representative Naval SNF Canister 5 Years after Reactor Shutdown). https://www.nrc.gov/docs/ML0907/ML090700889.pdf
Additional background regarding the Naval Nuclear Propulsion Program can be found at: https://www.energy.gov/nnsa/articles/naval-reactors-annual-reports