On March 2, 2007, the NNSA announced that the Lawrence Livermore National Laboratory RRW design had been selected for the initial RRW production version.[12]

One of the selection reasons given was that the LLNL proposed design was more closely tied to historical underground tested warhead designs. It was described by Thomas P. D'Agostino, acting head of the National Nuclear Security Administration, as having been based on a design which was test fired in the 1980s, but never entered service.[13]

LLNL staff have previously hinted in the press that LLNL was considering a design entry based on the tested but never deployed W89 design.[14] This warhead had been proposed as a W88 warhead replacement as early as 1991.[15][16] The W89 design was already equipped with all then-current safety features, including insensitive high explosives, fire-resistant pits, and advanced detonator safety systems. The W89 was also reportedly designed using recycled pits from the earlier W68 nuclear weapon program, recoated in Vanadium to provide the temperature resistance.[17] The W89 warhead was test fired in the 1980s.[15] It had entered **Phase 2A** technical definition and cost study in November, 1986, and **Phase 3** development engineering and was assigned the numerical designation **W89** in January 1988.[18]

The W89 warhead design was a 13.3 inch diameter by 40.8 inch long weapon, with a weight of 324 pounds and yield of 200 kilotons.[19] As noted above, major safety features inherent in the tested W89 design include:

- Insensitive and fire-resistant LX-17 Polymer-bonded explosive, a type of high explosive using TATB as its main explosive ingredient (see Insensitive munitions)
- Fire-resistant pit
- Type D Permissive Action Link[20]
- Strong link weak link detonation chain safety mechanisms[21]
- Two-point explosive lens assembly

Modifications for the RRW design would probably have included replacing Beryllium neutron reflector layers with another material, and increased performance margins throughout the design, possibly including more fissile material in the pit and a thicker radiation case or Hohlraum (see Teller-Ulam design#Basic design). Wikipedia