FUEL BUNDLE COMPONENT DESCRIPTION

COMPONENT	MATERIAL AND FABRICATION	DIMENSIONAL CHARACTERISTICS	OTHER DETAILS
Assembly	15 x 15	Length 149 inches, distance between tie plates 140.9 to 141.7 inches, rod pitch 0.550 inch	216 fuel rods (typical), 8 guide bars, 1 instrumentation tube, assembly pitch 8.355 to 8.615 inches, 10 grid spacers, 9 within active fuel zone
Grid spacers	Zr-4 welded eggcrate with Inconel spring strips. High strength design Zr-4 welded eggcrate with Zircaloy integrated flow channels. High strength and high thermal performance design (HTP)	Outside dimension 8.195 inches square	Batch R and S: Inconel grids mechanically fastened at bottom locations only Batch T and beyond: All zircaloy HTP spacers welded to the guide bars
Lower tie plate	Stainless steel casting	Outside dimension 8.250 inches square, 2.4 to 3.2 inches high	Reload R and beyond will have FUELGUARD™ insert in lower tie plate
Alignment pins	Inconel X-750	Length 2.50 inches, projecting length 1.47 inches	
Upper tie plate	Stainless steel casting	Outside dimension 8.16 inches square, 3.29 inches high	
Guide bars	Zr-4 annealed bar	Total length 140.9 to 141.7 inches, width .398 inch, maximum depth .450 inch	
Instrument tube assembly	Zr-4 tube, cold worked and stress relieved or M5® tube, fully recrystallized	Length 142.0 to 142.7 inches, OD 0.417 inch, ID 0.367 inch	Batch Y and beyond use M5®
Fuel rod		Total length 139.4 to 140.2 inches, active fuel length 131.80, plenum length 6.7 inches Batch R through W - active fuel length 132.6 inches and plenum length 6.83 inches Batch X and beyond - active fuel length 132.6 inches and plenum length 6.79 inches Batch W and beyond - long upper end cap rods active fuel length 122.0 inches	Rods pressurized to value that prevent collapse Beginning with Reload P for gadolinia rods and Reload Q for UO_2 fuel, "axial blankets" are used. These "blankets" are lower enriched uranium at the ends of the rods.
Fuel Pellets	Sintered UO_2 or UO_2-Gd_2O_3 pellets	Diameter 0.35 inch Batch R and beyond 0.36 inch	

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Cladding for fuel, Inert Rods	Zr-4, tube cold worked and stress relieved or M5® tube, fully recrystallized	OD 0.417 inch, ID 0.358 inch, wall thickness (min.) 0.0275 inch Batch R and beyond OD 0.417 inch, ID 0.367 inch, wall thickness (min.) 0.0225 inch	Batch Y and beyond use M5®
Poison	Gadolinia	None	Mixed with UO_2
Clearance available for fuel axial growth	Reload R and beyond assemblies can be burnt to 58,900 MWD/MTU average assembly exposure without UTP	1.48 inches	Consistent with projected batch burnup
Shield Rod SAN Assemblies	Stainless Steel Type 304	OD 0.417 inch Total Length 139.7 to 140.7 inches	Solid SS rods may also be used as inert rods for fuel repairs
Inert Rod (for Fuel Repair)	Zr-2, Zr-4, M5® or stainless steel may be used as rod filler	Total Length 139.6 inches, OD 0.417 inch Plenum Length 6.7 inches	Rod pressurized to a value that prevents collapse