

Fuel Assembly Loading Guide

Background

Installing fuel assemblies into the reactor core is a critical operation that requires extreme precision and control. In some instances, a fuel assembly cannot be correctly seated on the lower core plate pin due to distortions of the assembly being loaded, or of an adjacent assembly already in place. In these cases, the assembly cannot be inserted into the core without first “boxing” the assembly’s assigned core location. This boxing operation often requires temporary storage of a fuel assembly, which impacts the planned reload sequence. The Westinghouse fuel assembly loading guide (FALG) alleviates these complexities by safely aligning assemblies onto their assigned core locations the first time.



Description

The guides are positioned and precisely aligned by inserting tapered pins into the designated flow holes on the lower core plate. Once there, the guide controls the position of the fuel assembly bottom nozzle onto its alignment pins. The clearance between the guide and the fuel assembly bottom nozzle allows the guide to be easily removed and repositioned, as necessary, for the next assembly.

One FALG – the combination guide – is L-shaped and fits into two core locations adjacent to that of the assembly being loaded. The other, a single-sided guide, fits into a single core location and is used when fuel is loaded next to a baffle or when a row is completed where space for the combination guide is otherwise limited. Both guides are portable, lead-in chamfer devices, weighing approximately 40 pounds.

Benefits

Using the Westinghouse FALG, our customers can realize the following:

- Saved critical-path time and reduced crew exposure by eliminating temporary placement and subsequent double-handling of fuel assemblies
- Decreased risk of fuel assembly damage by limiting handling
- Reduced complexity and potential for human error associated with deviations
- Reduced (and in some cases, the elimination of) risks associated with “boxing,” bowed or twisted

Deliverables

- FALG(s)
- Trained and qualified crews necessary to effectively set-up, functionally check, deploy and use the FALG(s) during core reload; this typically requires two individuals on station during the entire reload evolution
- Applicable operating procedures and reference materials
- Determination of the appropriate use of the FALG(s) and positioning of them to enable a safe and effective core reload
- Removal of the FALG(s) from the water, disassembly and packaging for shipment, including wipe-down and/or wash-down as directed by site radiation protection