

N387. SONGS Favours Proven Technology

Cost-benefit analysis at San Onofre found that when it came to bolting the old methods were the best. At Southern California Edison's San Onofre Nuclear Generating Station (SONGS), the proper tension on the reactor vessel head closure studs is obtained by stretching the studs with a hydraulic tensioner. When the force of the tensioner is released, the stud nuts take up the stud tensile force, and the studs maintain the proper tension.

The vessel heads on SONGS units have been tensioned and detensioned about 15 times and the manual stud tensioners have proven their reliability. In an effort to reduce outage time and person-rem exposure, SONGS considered using an automated system and compare the outage benefit to cost for this tooling. After careful analysis, the automated multi-stud tooling approach was not approved, and the existing manual tensioners were retained. The primary reasons for this are:

1) An individual tensioner tool problem does not halt the tensioning sequence, while an automated tensioner fault could stop the entire sequence.

2) A multi-stud tensioner tool requires partial disassembly and reassembly to pass through the equipment hatch, and to land onto the reactor head.

3) An automated system requires more polar crane usage at a period in the outage schedule when crane usage is critical.

4) The reduction in outage critical path time (2 hours saved) and ALARA savings could not offset the present cost of automated tooling. Edison uses a cost-benefit comparison process to justify large equipment purchases, which found that specific outage time savings would not cover the tooling cost within the pay-back criteria period of six years.

5) With movable reactor head lead curtains, the radiation dose levels associated with the manual method are reduced, so the ALARA benefit of an automated system is less.

6) Operator training and performance on existing proven tooling has historically worked well at SONGS.

In conclusion, Edison evaluated the benefits of new tooling technology and decided to continue using the proven manual tensioning system.

Taken from, "SONGS Favours Proven Technology," by D. Brown. Nuclear Engineering International, pg.54, July 1995. For further information, contact Donald brown, Southern California Edison, Room 199, 2244 Walnut grove, Rosemead, CA 91770.