

operation, these TLAA remain valid through the period of extended operation per 10CFR54.21(c)(1)(i). Nonetheless, as the surge nozzles require environmental fatigue considerations, they will be reanalyzed for license renewal as discussed in Section 4.3.3.

4.3.1.4 Steam Generators

Summary Description

IP2 replaced steam generators during an outage completed in January 2001. IP3 replaced steam generators during an outage completed in June 1989. The IPEC replacement steam generators were analyzed for fatigue in their component stress reports. The replacement steam generators were re-evaluated with respect to fatigue for the power increase.

Cumulative usage factors for critical components, shown in Table 4.3-9 and 4.3-10, are from the power uprate analyses. Usage factors for additional, non-critical, components are available in the stress reports. The usage factor calculations are considered TLAA.

Table 4.3-9
Cumulative Usage Factors for the IP2 Steam Generators

Location	CUF
<i>Primary Side</i>	
Divider plate	0.683
Tubesheet/shell junction	0.451
Tube/tubesheet weld	0.809
Tubes	0.484
<i>Secondary Side</i>	
Main feedwater nozzle	0.898
Secondary manway stud ¹	0.438
Steam nozzle	0.212
Steam nozzle support ring	0.220
Steam nozzle insert	0.212

1. The IP2 replacement steam generators use studs and nuts.
There are no longer any secondary manway bolts in use at IPEC.

Table 4.3-10
Cumulative Usage Factors for the IP3 Steam Generators

Location	CUF
<i>Primary Side</i>	
Divider plate	0.789
Tubesheet/shell junction	0.416
Tube/tubesheet weld	0.082
Tubes	0.161
<i>Secondary Side</i>	
Main feedwater nozzle	1.00
Secondary manway stud ¹	0.920
Steam nozzle	0.023
Steam nozzle support ring	0.894
Steam nozzle insert	0.208

1. The IP3 replacement steam generators use studs and nuts.
There are no longer any secondary manway bolts in use at IPEC.

Evaluation

Section 4.3.1 projects that none of the design transients used for steam generator fatigue analysis will exceed their analyzed numbers during the period of extended operation. These usage factor calculations are based on the design transients discussed in Section 4.3.1 and will remain valid for the period of extended operation in accordance with 10CFR54.21(c)(1)(i).

4.3.1.5 Reactor Coolant Pump Fatigue Analysis

The reactor coolant pumps were evaluated with respect to fatigue for the stretch power uprate. Stresses in the reactor coolant pumps were reviewed and shown to remain within the ASME Code allowable stresses. These stress calculations have no time dependent assumptions and therefore are not TLAA.

Detailed fatigue analyses of RCP casings were not required because the conditions specified in the 1965 edition of the ASME code Sections N-415.1(a) through (f), "Vessels Not Requiring Analysis for Cyclic Operation," were met. These fatigue waiver evaluations may be considered TLAA if they used the numbers of design cycles in the evaluation of items N-415.1(a) through (f). IPEC has chosen to conservatively call the evaluations TLAA. These determinations were based on the numbers of design cycles. The projections in Tables 4.3-1 and 4.3-2 show that the numbers of significant cycles in 60 years will remain below the numbers of cycles used in these