

copper bearing alloys in the condenser and feed water heater system. This phenomenon occurs at the intersection of the Inconel 600 tubes and the carbon steel support plates. Corrosion products typically will plug the crevice between the support plate and the tube. If water chemistry is not carefully controlled, chloride ions enter the porous corrosion product deposit and are concentrated to the point where corrosion of the carbon steel support plate occurs. Since the corrosion product has a lower density than the carbon steel that has been corroded away, the crevice between the tube and support plate is closed. Continuation of the corrosion results in compressive forces being applied to the tube which then dent and leads to potential tube leakage.

At Byron Station, this problem has been addressed in two ways. First, copper alloys have been eliminated from the secondary system. The removal of copper removes the catalyst for the corrosion in the tube support plate crevice. Second, the Byron chemistry control program is designed specifically to minimize the ingress of contaminants into the steam generator. The result of this action will be to eliminate corrosion in the crevices. This has been found to be effective at several other plants.

Thinning or wastage of Inconel 600 Tubing has been observed in plants as the result of long-term sodium phosphate treatment. This was typically associated with a high phosphate sludge pile in older steam generators where