Q. **Project C-94**: **Replace Battery Banks and Chargers - Various Sites**

Further to IC-NLH-42**,** Appendix "Replace Battery Banks and Chargers", Volume III, at pages 1-2, Hydro states that the flooded-cell battery has a typical service life of 18-20 years and the VRLA battery has a typical service life of 7-10 years. What is the source for this information?

A. A service life of 20 years is quoted in the manufacturer's data sheets for flooded cell batteries as a "design life". The typical service life of flooded-cell batteries can be reduced to 18 years depending on the environmental conditions and the number of deep cycles actually experienced.

A service life of ten years is quoted in the manufacturer's data sheets for VRLA batteries as a "design life". The typical service life of VRLA batteries can be reduced to seven years depending on the environmental conditions and the number of deep discharges actually experienced."

Lead acid batteries are of a sacrificial design with unavoidable degradation over time. The life expectancy of a VRLA (7-10 years) or flooded lead acid (18-20 years) cell is an industry standard and is rated as such by all major manufacturers. Once a cell reaches the above stated age, they are considered to have reached their end of life. It has been observed by manufacturers, as well as end users, that using cells past the recommended replacement age results in exponentially increasing failure rates, and thus decreased reliability as well as an accelerated and rapid reduction in total capacity.