Q. Page 12, lines 13-18: Hydro states that the oil ash corrosion as experienced on Unit 1 and 2 lower reheaters occurs when low melting constituents in the heavy oil deposits on the tubes combined with temperatures where the tube surfaces exceed 1100°F.

Please explain how reheat tube surface temperatures in excess of 1100°F (593.3°C) is consisted with the design temperature of 538°C indicated on page 13, line 4.

A. The reheater tubes are designed to transfer heat from the boiler flue gas (from the combustion of fuel oil) on the outside of the tubes to the reheat steam flowing inside the tubes. The design temperature of 538°C refers to the temperature of the steam flowing through the final (lower) tubes in the reheater. The gas temperature outside the tubes is much higher than 538°C. The tube material temperature will reach a temperature that is between the temperatures of the two fluids and will vary across the cross-section of the tube wall, with the hottest temperature on the outside. In sections of the boiler where the gas and steam temperatures are high enough, such as occurs in the lower reheater tubes of Unit 1 and Unit 2, the external metal temperature of the tube will exceed 593.3°C (1100°F).