6.3.1 Introduction to Pressure Drop

An obvious objective of the analysis of the flow in the primary coolant loop is the prediction and understanding of the pressure drop in the flow through the core and the corresponding pressure increase in the flow through the primary coolant pumps. As long as these remain single phase flow, the analyses do not differ greatly from the parallel features in any power plant and it will be assumed herein that the reader has some familiarity with such single phase flow analyses. However, when boiling occurs either by design or because of some abnormal excursion, the resulting multiphase flow requires more complicated analyses and those methods will be briefly reviewed in the next few sections. It should be noted that the literature contains a plethora of engineering correlations for multiphase flow pipe friction and some data for other components such as pumps. This section will provide an overview and some references to illustrative material, but does not pretend to survey these empirical methodologies.