

## **8-1. Introduction**

Any RO system malfunction manifests itself in a loss of salt rejection, a loss of permeate flow, and an increase in differential pressure, respectively or collectively.

If one of the three parameters or combined ones deviates slowly from the normalized value, it may indicate a normal fouling and scaling which can be removed by proper cleaning.

A fast or an immediate performance decline indicates a defect or mis-operation of the system. It is essential in this case that the proper corrective measure is taken as early as possible because any delay decreases the chance of restoring the system performance and also it may create other problems.

A prerequisite for early detection of potential problems is consistent record keeping and performance normalization, including proper calibration of all instruments. It may not be possible without accurate readings to detect a problem early.

After the problem has been detected, the next step is to localize the problem and to identify the causes of the problem. This can be done using the data of the record keeping log sheet or some additional on-line measurements.

If the data are not sufficient to determine the causes, one or more membrane elements must be taken out of the system and analyzed by either nondestructive or destructive methods.