8-3. Locating High Salt Passage (Low Salt Rejection)

A loss in salt rejection may be uniform throughout the system or it could be limited to the front or to the tail end of the system. It could be a general system failure or it could be limited to one or few individual vessels. The location of the high salt passage can be isolated by following three steps:

- Check the individual vessel permeate TDS values.
- Probe the suspected vessel.
- Individually test each element in the vessel.

A well-designed system contains a sample port located in the permeate stream from each vessel. Care must be taken during sampling to avoid mixing of the permeate sample with permeate from other vessels. All permeate samples are then tested for their concentration of dissolved solids with a TDS meter. Notice that from one array to the next the average permeate TDS usually increases, because the second array is fed with the concentrate from the first array. To determine the salt passage of all vessels from their permeate TDS; the TDS of the feed stream to each array must also be measured. The salt passage is the ratio of the permeate TDS to the feed TDS.

If one pressure vessel shows a significantly higher permeate TDS than the other vessels of the same array, then this vessel should be probed. Probing involves the insertion of a plastic tube (approx. 1/4" for 8" module) into the full length of the permeate tube (see Figure 1).

While the RO system is operating at normal operating conditions, water is diverted from the permeate stream of the vessel in question. A few minutes should be allowed to rinse out the tubing and allow the RO system to equilibrate. The TDS of the permeate sample from the tubing can then be measured with a hand-held meter and the data be recorded. This measurement should reflect the TDS of the permeate being produced by the CSM element at that location.
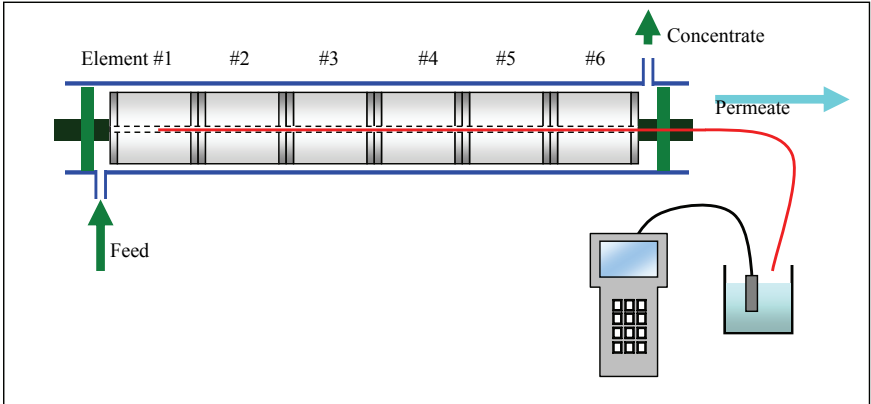
3. Locating High Salt Passage (Low Salt Rejection)

Figure 4. Probing individual elements