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Membrane Plant Testing and Commissioning Checklist

Successful startup and commissioning of membrane plants requires advanced planning, appropriate care and extreme attention to details and logistics. What we do and do not do during this short but critical period could impact the facility for the operational life of the plant.

Unfortunately, many owners and contractors are in such a hurry to get the plant started that critical steps are often rushed, and regrettable shortcuts are taken. It is important to dedicate the proper amount of time and effort to adequately commission and test membrane plants.

Included below is a partial checklist for a successful membrane plant start up and commissioning. I am sure you can add a few more tasks to the list which is fine because the more items completed on this list, the smoother the commissioning phase will be. Good Luck!

Facility:

- Is the facility painted and cleaned and is all interior construction debris removed?
- Is there adequate lighting, ventilation and open walkway access for a safe startup?
- Is clean water, a washroom, bathroom, dumpster and other items available?

Manufacturers Reps, Vendors and Consumables:

- Are the manufacturer's representatives scheduled to be on-site at the proper times to offer testing and operations support?
- Are the initial start-up chemicals on site?
- Are proper amounts of consumables on site?
- Do you have the first and spare sets of RO pretreatment cartridge filters, springs and O-rings?
- Do you have lubricants, O-rings, end connectors, towels, buckets, rope and cleaning balls to load RO elements?

Documentation:

- Are draft O&M manuals and as-built drawings on site?
- Are all operator log sheets, forms, test protocols, etc. in place?
- Is there a Tag-out, Lock-out procedure in place?

Utilities:

- Have all impacted water, sewer, power, and gas agencies been notified of the pending start up and are they aware of your plans and schedule?
- If you plan to flush hydrants and put water on streets, have you notified the Roads Department?

Equipment Testing and Procedures:

- Have all wires been pulled and all control wires I/O checked and tested?
- Have all field instruments been calibrated and accuracy verified?
- Are all individual equipment, pumps and chemical systems tested and controls verified in the PLC?
- Is all piping pressure tested, disinfected, and do you have a passing bacti test?
- Has the entire pretreatment system been tested, commissioned and verified to produce acceptable feed water quality to the downstream membrane system?
- Do you have the appropriate hand-held and bench top analyzers (i.e. temperature, pH, Turbidity, conductivity meters, etc.)?
- Is the laboratory ready or on call, and are preserved bottles and sampling procedures in place?
- If the new facility is tied to an existing facility, have you considered the potential for cross contamination and impacts of water quality?
- Are temporary pipes and disposal facilities available to handle the necessary flushing and resulting waste volumes?
- Have the waste and excess water handling and temporary water/waste disposal procedures been outlined, coordinated and logistics established?
- Are emergency shut downs and switchovers in place?

Operators:

- Do you have enough available personnel and are they willing to work long hours and overtime?
- Are the operators available for training? Remember, this is the best time to conduct "hands-on" training.
- Has the entire team been briefed on safety and emergency plans and is appropriate Personal Protective Equipment (PPE) available? ■