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Standard Guide for Record Keeping for Electrodialysis/Electrodialysis Reversal Systems¹

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1. Scope

1.1 This guide covers procedures for well defined record keeping for electrodialysis (ED) and electrodialysis reversal (EDR) systems.

1.2 This guide includes a start up report and record keeping for ED/EDR and pretreatment operating and maintenance data.

1.3 This guide is applicable to all waters but is not necessarily complete for waste waters.

1.4 This is a guide only and should not be construed as a complete delineation of all record keeping required for a specific application.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1125 Test Methods for Electrical Conductivity and Resistivity of Water²

D 1129 Terminology Relating to Water²

D 1253 Test Method for Residual Chlorine in Water²

D 1889 Test Methods for Turbidity of Water²

D 4189 Test Method for Silt Density Index (SDI) of Water²

D 5091 Guide for Water Analysis for Electrodialysis/Electrodialysis Reversal Applications³

3. Terminology

3.1 *Definitions*—For definitions of terms used in this guide refer to Terminology D 1129.

4. Significance and Use

4.1 Proper operation and maintenance of an ED/EDR system and any associated pretreatment system are key factors in obtaining optimum performance. This guide provides the

necessary input data for the evaluation of the performance of the ED/EDR system, the pretreatment system, and the mechanical equipment in the plant.

4.2 This guide is for general guidance only and must not be used in place of the operating manuals and manufacturer's recommendations for specific equipment or a specific application.

4.3 Site dependent, equipment design and regulatory requirement factors prevent specific recommendations for all record keeping. Thus, only general record keeping relating to operation and maintenance is covered by this guide.

5. Procedure

5.1 *Start Up Report:*

5.1.1 Provide a complete description of the water source, pretreatment system, ED/EDR plant, and post treatment equipment. This can be done by using the system flow diagram and equipment material and instrumentation lists.

5.1.2 Provide a listing of all specific chemicals used with their design dosage rates.

5.1.3 Provide a listing of all design parameters for pressures, flows, water analysis for raw water and ED/EDR feed product and brine waste, temperature, and dc power applied to the ED/EDR system.

5.1.4 Provide a record of instrument calibrations in accordance with manufacturers recommendations.

5.1.5 Record initial performance of the pretreatment, ED/EDR, and post treatment systems as provided in 5.1, 5.3, and 5.4 respectively.

5.2 *ED/EDR Operating Data:*

NOTE 1—ED/EDR process monitoring equipment and site specific monitoring equipment vary with manufacturer's designs. Consult the equipment manufacturer to determine the specific listed items to be monitored.

NOTE 2—The periodic polarity reversal in reversing electrodialysis systems upsets the process equilibrium. Data should not be taken during the period of reversal. Consult the equipment manufacturer to determine the periods of time at which operating data should be taken.

5.2.1 The recommended minimum frequency of data collection is daily unless otherwise noted. On large or critical systems more frequent data collection, such as once per shift, for daily items, may be justified.

¹ This guide is under the jurisdiction of ASTM Committee D19 on Water and is the direct responsibility of Subcommittee D19.08 on Membranes and Ion Exchange Materials.

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² *Annual Book of ASTM Standards*, Vol 11.01.

³ *Annual Book of ASTM Standards*, Vol 11.02.