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Standard Guide for Specifying Thermal Performance of Geothermal Power Systems¹

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INTRODUCTION

The following sections describe a guide for determining the thermodynamic excellence of geothermal power systems. This guide may be used to establish and compare performance levels of alternative geothermal plant designs using equal or different resource conditions and is intended as a means for supplying information in support of geothermal plant optimization.

It is also the purpose of this guide to promote the common use of pertinent comparison criteria for geothermal power systems, and to discourage the use of some criteria which may range from less useful to misleading.

1. Scope

1.1 This guide covers power plant performance terms and criteria for use in evaluation and comparison of geothermal energy conversion and power generation systems. The special nature of these geothermal systems makes performance criteria commonly used to evaluate conventional fossil fuel-fired systems of limited value. This guide identifies the limitations of the less useful criteria and defines an equitable basis for measuring the quality of differing thermal cycles and plant equipment for geothermal resources.

1.2 *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. Significance and Use

2.1 Thermal efficiency and heat rate are frequently utilized to evaluate the thermodynamic quality of fossil fuel-fired power

¹ This guide is under the jurisdiction of ASTM Committee E-44 on Solar, Geothermal, and Other Alternative Energy Sources and is the direct responsibility of Subcommittee E44.20 on Geothermal Utilization.

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