

CHAPTER 6 - REWIND OF HYDROELECTRIC GENERATORS AND GENERATOR MOTORS

6-1. Purpose. This chapter establishes guidance on replacement of generator stator windings, generators, or other comparable large scale electro-mechanical components of a USACE hydroelectric power generating facility.

6-2. Background.

a. This guidance is designed to assist hydropower managers in providing higher authority with a uniform and consistent rationale for replacing a generator or generator/motor winding. It also provides the framework for justifying the replacement of a generator stator winding as part of a major rehabilitation program.

b. The goal of this rewind procedure is to develop a decision document that justifies a generator winding replacement before a catastrophic failure. That decision depends on adequately describing the condition of the winding and displaying the economic justification to support the decision.

6-3. Guidance.

a. Replacement of generator stator windings shall be based upon the factors found in Appendixes K, L and M. Each unit will be considered on its individual merits. Brief reports shall be prepared that contain this evaluation. Consideration shall be given to uprating the unit, whenever replacement of the winding is contemplated. Appendix N is a partial listing of technical standards.

b. The factors identified in subparagraphs (1) and (2) shall be addressed in the report as a basis to support the need for a generator rewind. The additional factors in subparagraph 3 shall be addressed to support generator uprating, if recommended, and shall be included in the report. If generator uprating is not recommended, the report shall address the factor or factors which makes an uprating not feasible. In accordance with ER 1110-2-109, Hydroelectric Design Center will prepare the engineering and design features of the reports and other engineering documentation.

(1) Background Information. Provide a tabulation of pertinent data for the existing generator, turbine, transformer and other associated equipment. See Appendix K.

(2) Rewind Evaluation. Provide an analysis of the need for any proposed rewind that considers the condition of the existing winding and the impact of forced rewind if a scheduled rewind is not accomplished. The analysis should be developed around Appendixes L and M.

(3) Potential for Uprating. If uprating is recommended, an analysis shall be prepared to demonstrate that an uprating is justified based on the following factors:

(a) Compatibility of new winding with existing generator circuit breaker, excitation equipment, transformer, buswork, structural, etc.

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(b) Hydrology (turbines, water availability): Additional mechanical power capability to increased generation.

(c) Marketability of the increased capacity and/or energy, see Section 103(c)(1), Public Law 99-662, (WRDA 86).

(d) Environmental impacts, see Section 216, Public Law 104-303, (WRDA 96).

(e) Economic justification.

FOR THE COMMANDER:

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