CHAPTER 1 - INTRODUCTION

1-1. Purpose. This pamphlet establishes the guidance for the operation and maintenance (O&M) of USACE hydroelectric power generation facilities and related structures at civil works water resource projects and supplements Engineer Regulation (ER) 1130-2-510.

1-2. Applicability. This guidance applies to all USACE commands having responsibility for civil works functions and hydroelectric power generation.

1-3. References.

a. PL 85-507, The Government Employees Training Act, 7 July 1958.

b. PL 95-91, Section 302, 95th Congress, Department of Energy Organization Act, 4 August 1977 (91 Stat. 565).

c. PL 99-662, Section 937, Reports on Hydropower Statistics, Water Resources Development Act of 1986.

d. PL 104-303, Section 216, Water Resources Development Act of 1996.

e. PL 534, Section 5, 78th Congress, Flood Control Act of 1944, 22 December 1944, (58 Stat. 889).

d. AR 690-400, Employee Performance and Utilization, Chapters 410, 430 and 432.

e. USACE Supplement 1 to AR 690-400, 410 and 430, Employment Performance and Utilization Training.

f. ER 385-1-31, Safety Clearance Procedures

g. ER 1105-2-100, Guidance for Conducting Civil Works Planning Studies.

h. ER 1110-2-109, Hydroelectric Design Center.

i. ER 1110-2-1200, Plans and Specifications.

j. ER 1130-2-500, Partners in Support (Work Management Policies).

k. ER 1130-2-510, Hydroelectric Power Operations and Maintenance Policies.

l. REMR Condition Rating Procedures/Condition Indicator For Hydropower Equipment.

1-4. Glossary.

a. Allocated Power Investment Cost. That portion of total project investment cost which is allocated to generation of power based on firm cost allocation of multipurpose projects with power.

b. Available Hours. The hours during which a unit is available. Available Hours (AH) is equal to the sum of Service Hours (SH) plus Reserve Standby Hours (RSH).

c. Balance of Total Investment Cost. The cumulative unpaid federal investment in power facilities. The cost includes the additional federal investments subsequent to the initial placement of generating units in service and the credits for the revenues transferred to the project.

d. Delayed Forced Outage Hours (DFOH). The hours for any malfunction that results in removal of a generating unit from connection to the transmission system for maintenance or repair at a later time, so as to allow an outage to be scheduled after the trouble develops.

e. Equipment Failures and Generation Interruptions. For the purpose of this guidance, equipment failures and generation interruptions are defined as those affecting the project's major power plant equipment which are necessary for generation of hydroelectric power. Such equipment may consist of turbines, generators, transformers, switching equipment, station service system, etc. Also included in this definition is loss of power generation due to project operating procedures and errors, improper or faulty maintenance or work practices. Interruptions due to lightning strikes, outages of non-USACE facilities, and those where impact to service, equipment, cost, etc. is insignificant are excluded.

f. Forced Outage Hours (FOH). The hours for any failure, misoperation, or malfunction that results in the immediate automatic or manual removal of a generating unit from connection to the transmission system, or that prevents such connection from being accomplished when desired.

g. Generator Forced Outage (GFO). Any generating unit forced outage caused by a misoperation, failure or malfunction of a turbine, water passage, governor, or generator, including related auxiliaries or controls. These items are considered to represent a generating unit.

h. Generator Scheduled Outage (GSO). A scheduled outage for a generating unit. (See 1-4.g. above and Note 1 below.)

i. Hours. Hours will be recorded to the nearest hundredth.

j. In-Service Date. The in-service time and date reported in compliance with ER 1130-2-510, Chapter 2, Reports on Hydroelectric Power Generation Statistics.

k. Non-Generator Forced Outage (NGFO). A forced outage caused by misoperation, failure or malfunction of equipment or facilities beyond the load side of the generator terminals.

l. Non-Generator Scheduled Outage (NGSO). A scheduled outage for equipment other than a generating unit. (See 4-4.l. above and Note 1 below.)

m. Period Hours (PH). The number of hours in the year for existing units. For new units, the hours since the unit was first synchronized until the end of the year.

n. Planned Modification Hours (PMH). Scheduled outage for installation of new equipment, switchyard rearrangements or to correct design or construction deficiencies.

Replacement of existing equipment due to failure or normal deterioration is not included. (See Note 1 below.)

o. Reserve Standby Hours (RSH). The hours during which a generating unit is not in service, but is available for use if required.

p. Service Hours (SH). The hours during which a generating unit is connected to the transmission system either supplying power or condensing; i.e., the time during which the generator main power circuit breaker is closed.

q. Scheduled Outage Hours (SOH). The hours for routine repetitive maintenance and repair that have been programmed into the power schedule.

NOTE 1: When a variety of work is performed on both generating unit and non-generating equipment, the primary reason for the outage will determine to which category the outage hours will be charged. Outages due to reservoir conditions, high tailwaters, flood control operations, loss of transmission lines, or short outages for trash removal are not to be considered unavailable time.