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HW--32372

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PROCESS TEST MR-105-23

CATHODIC PROTECTION OF THE 107-C RETENTION BASINS

OBJECT

The object of this test is to determine the feasibility of preventing corrosion of the 107-C retention basins by the installation of a small scale cathodic protection system.

BASIS AND JUSTIFICATION

The 107-C retention basins are fabricated from welded carbon steel sheets and are approximately 330 feet in diameter and about 16 feet in height with an open top. Reactor effluent water at temperatures of 50-60 C is stored in them prior to discharge into the Columbia River.

Corrosion of the inside surfaces of the tanks has been evidenced by blistering and loosening of the paint coating. If an impervious coating such as paint fails to provide adequate protection against corrosion, cathodic protection is usually considered to be the best alternative method of corrosion prevention. Therefore, the installation of a small scale cathodic protection system designed to investigate and establish criteria for a full scale installation appears warranted.

SPECIAL RE-REVIEW

FINAL DETERMINATION

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BY JP Davis DATE 6-17-81

BY Jul Jordan DATE 6-18-81

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PROCEDURE

The test installation will be made on the west 107-C retention basin. The equipment essentially consists of two graphite and two aluminum anodes which will be suspended from brackets mounted on the tank wall. The anodes will be placed along the edge of the tank approximately seven to eight feet from its inner surface and from 15 to 20 feet apart. A DC potential no greater than 24 volts will be impressed on the system. Exact positioning of the anodes will be determined from potential measurements at the anodes and tank walls made with a high resistance voltmeter.

Underwater photography will be used for determining the extent of the protection supplied by the test installation.

SCHEDULE

Installation of the cathodic protection system will begin as soon as this test is authorized and all equipment arrives on-site. The duration of the test will not exceed 18 months from the date of installation.

COSTS

No equipment or installation costs will be incurred by the Reactor Section, as all work will be done under Design Section appropriations for this study. Necessary work orders, work requests, etc., will be provided by C. S. Bucholz, Engineering Standards and Materials Unit, Design Section.

RESPONSIBILITIES

The Process Sub-Section assumes the responsibility for coordinating cooperative effort between Design Section and Reactor Section personnel, and for preparing a final report.

R. R. Bloomstrand
Reactor Operation Engineering
Process Sub-Section
REACTOR SECTION

RRB:wy

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APPROVALS

R. O. Mohann

R. O. Mohann, Production Superintendent

C. Schroeder by R. M. Guth

C. Schroeder, Superintendent
Process Sub-Section
REACTOR SECTION

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