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Classification Cancelled and Changed To

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• WDC 1243

By Authority of D. S. Lewis
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May 27, 1949

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TO: H. J. White
 FROM: C. M. Burns *cm B.*
 Subject: SHEET ROD TESTS

The overall testing of the vertical sheet rod system is a comprehensive program which has been divided into several phases. These phases are presented below, with a short resume of the testing required under each phase, to enable the formulation of the project proposal for the complete test program.

- It is intended that very detailed test requests will be issued for the separate phases as data from previous tests and further design studies indicate the exact information or data desired from a particular test.

Phase I

Determine normal operating characteristics and allowable distortions with major components (rod, rod guide and graphite stack) installed in test tower.

- A complete outline of this phase has been submitted in HDC 1225.

Phase II - Step Plug & Rod Guide

With the step plug in place, perform each of the following drop tests until a minimum of three readings on the space-time recorder are consistent.

- Straight drop with all components aligned, vary rod slot to determine minimum allowable opening.
- Distort graphite stack as per furnished curves simulating various degrees of graphite growth, and adjust the step

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plug accordingly to determine the amount of freedom or adjustment necessary in the final design of the step plug to meet the expected graphite growth. *adjust for test fall?*

Record the movement and/or rotation of the step plug necessary to allow proper operation of the rod.

There will be approximately five different types of distortion required with approximately eight magnitudes of distortion for each type. Maximum distortion for each to be determined from information obtained from tests conducted in Phase I. *spiral type forcing, lifting, twist, or combinations*

Phase III - Packing Gland

With packing gland assembled on the step plug in place in the test tower, conduct same distortion tests as outlined in Phase II. The maximum allowable distortion will be contingent upon information gained from Phases I and II.

It will be necessary also to conduct pressure and life tests on the packing gland. These tests will necessarily have to be performed using a pressure tight vessel at some location other than the test tower. Pressures to be used are 2 inches of water minimum and 5 psi maximum. The test will consist of numerous insertions and withdrawals of a section of rod at various angles, temperatures and speeds. These variables will be determined from previous phases of this test. *follow by pressure test from phase?*

Phase IV - Winch Test

Record pressure build up in the hydraulic braking mechanism of the winch at various rod positions, when the rod is dropped with (a) all components aligned and (b) various distortions as outlined in Phase II. Maximum distortions will be determined from results obtained from Phases II and III.

Phase V - Additional Distortion Tests

Conduct tests with all components assembled. The tentative outline for this test will be the same as in Phase II, and will be contingent upon results of previous phases.

Each step in the outline will be tested under each of the following conditions:

1. Normal drop with hydraulic braking mechanism on winch acting.
2. Semi-free fall with hydraulic winch braking mechanism cut out. *drum?*

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PHASE VI - Hydraulic Shock Absorber

Conduct these tests under free fall conditions and all components aligned with load factor reading taken at each six inch interval, and orifice diameter changed if necessary before continuing the test. The load factor is at no time to exceed 33 g's.

PHASE VII - Free Fall

Test to determine structural stability of rod and effects of hydraulic shock absorber. This test to include all drops as outlined in Phase II using maximum distortions as determined from Phase V.

CMB:cf

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