

To: J. G. Cole

From: S. M. Smith
Date: September 26, 1988

Interoffice
Communication

Subject: CT-50 Performance Test - Summary of Results

VISTA

A performance test was performed on CT-50, the main plant cooling tower, August 17, 1988 by Midwest Research Institute. The results of the test indicate the tower is performing at 76.8% of its original design capability. The tower capability can be improved by replacing the existing cooling tower fill and fans with new, more efficient cooling tower fill and fans.

The below design tower capability is a result of cooling tower aging and inadequate tower design. Cooling tower aging creates problems such as the leaking wooden distribution header (which was replaced prior to the performance test) which prevented equal water distribution throughout the tower. All of the known problems due to cooling tower aging were remedied prior to the performance test. The greatest known factor which is reducing the tower capability is inadequate tower design. A Marley representative has commented that tower design in the 1960's was not as accurate as it is today. Replacing the existing cooling tower fill and fans with new, more efficient cooling tower fill and fans will enable the tower to perform above its design capability.

The test was conducted in accordance with CTI Acceptance Test Code ATC-105. A data acquisition system was used to automatically collect thermal data. The cooling tower flow rate was determined by a pitot tube traverse on the cooling water return header. Below is a table summarizing the results of the performance test. The original cooling tower design conditions are also listed in the table.

Summary of Test Results: August 17, 1988

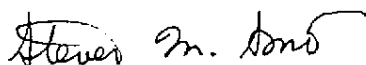
<u>Parameter</u>	<u>Test Result</u>	<u>Design Condition</u>
Range, °F	15.12	20
Approach, °F	12.38	9
Water Flow, GPM	42,214	44,000
Tower Capability, %	76.8	100

CWH 000009759

Discussions with Mike Moreaux of Cooling Tower Technologies, Inc., previous to the performance test, indicated that a 5°F to 6°F approach (outlet water temperature less wet bulb temperature) could be realized after installation of new, more efficient cooling tower fill and fans. A 3°F decrease in the approach (from the design approach) will result in approximately 6°F cooler water. Decreasing the approach temperature will provide increased cooling to the HCl column feed and overhead streams, which have, at times, experienced cooling limitations during summer months. The cooling limitations decreased VCM production.

Installation of new, more efficient cooling tower fill is budgeted for the 2nd Quarter 1989 for \$307M. The economics were based on increased VCM production resulting from the increased cooling capacity. The economics for this project will be reevaluated in light of the recent shutdown findings (no summer cooling limitation after key vessels were cleaned in May), the future expansion plans, and the approach temperature guaranteed by Cooling Tower Technologies, Inc.

Please contact me if you have any questions, comments, or would like to review the cooling tower test report.



S. M. Smith
Process Engineer

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cc: RAC MDB GEH WPS WPB GGB SCR PE
PFF (Houston)

CWH 000009760