

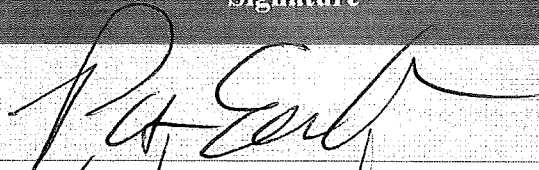

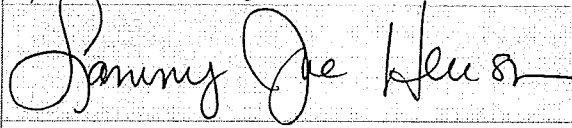

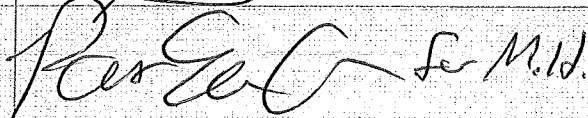



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|  | GILES CHEMICAL ~ PREMIER MAGNESIA | |  |
| | Validation Protocol | | |
| | Title: Digester #2 Final Report | Number: E17-VAL-PFR-261 | |
| | Owner: Kenneth Basehore | Revision: 0 | |
| | Effective Date: 1/31/17 | Page: 1 of 5 | |

I. Approvals

Signing below indicates agreement that the execution of the Installation, Operational and Performance Qualification Protocol (E17-VAL-PIQ-260) for Digester #2, located at 102 Commerce Street, is complete and the process is validated.

| Project Member | Functional Area | Signature | Date |
|------------------|-----------------|---|---------|
| Patrick Owen | Engineering |  | 9/20/17 |
| Kenneth Basehore | Engineering |  | 9/20/17 |
| Sammy Henson | Maintenance |  | 9/20/17 |
| Jason Bumgarner | Production |  | 9-20-17 |
| Matt Haynes | Operations |  for M.I.D. | 9/20/17 |
| Deborah Durbin | Quality |  | 9/20/17 |

A copy of the executed protocol will be attached to this report.

Controlled Document



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II. Purpose

The purpose of this protocol is to certify with documented evidence that Digester #1 functions as intended throughout its anticipated operating ranges. This protocol sets forth the objectives, methodology, documentation, and test activities needed to complete the Installation Qualification (IQ), Operational Qualification (OQ) and Process Qualification (PQ) for Digester #2, located at 102 Commerce Street at the Main Plant production facility.

III. Summary

The vessel produces a $MgSO_4$ aqueous solution, through the reaction of MgO , water and sulfuric acid.

The following tests were performed during this qualification:

- Reagent feed to the digester
- Reaction exotherm
- Agitator run state
- Recirculation flow rate

All installation, operational and performance acceptance criteria were met as displayed in the attached executed protocol.

IV. Conclusion

The results of the completed installation, operational and performance qualification protocol show that all acceptance criteria were met for all samples. All testing results provide documented evidence that Digester #4 is installed, is operating and is performing as expected.

The tests were performed on 9/19/17 and 9/20/17, with training on the procedure updates completing on 12/12/17.

V. Recommendations

It is recommended that Digester #2, located at the Giles Chemical Main Plant at 102 Commerce Street, Waynesville, NC 28786 be considered validated based on meeting the acceptance criteria of the IQ/OQ/PQ protocol.

VI. References

E17-VAL-PIQ-260: Digester #2 IQ/OQ/PQ Validation

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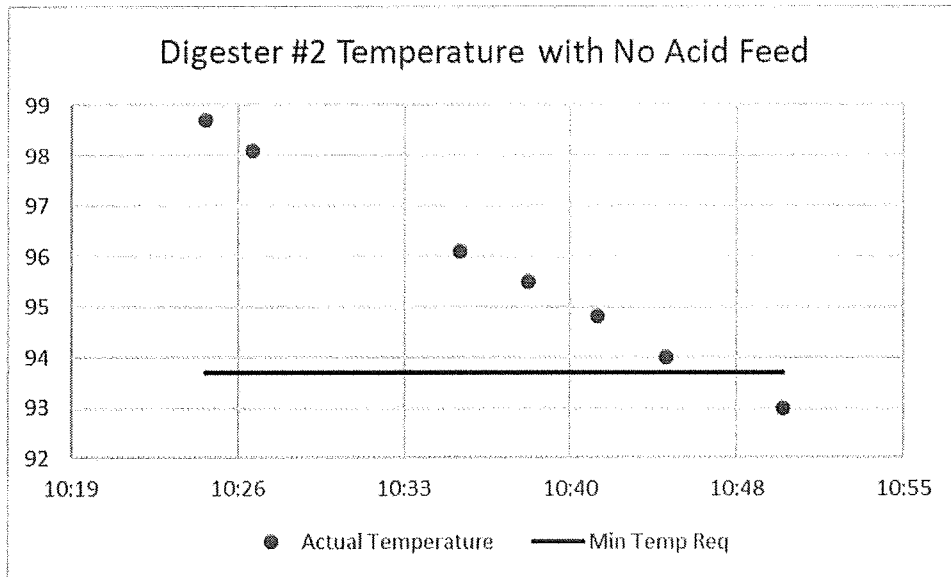
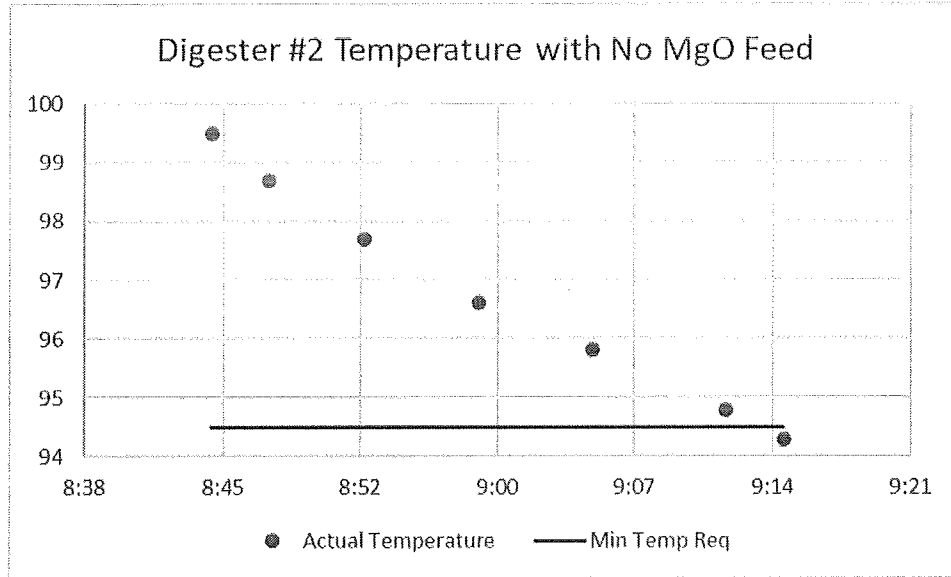
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VII. Summary of Temperature Data



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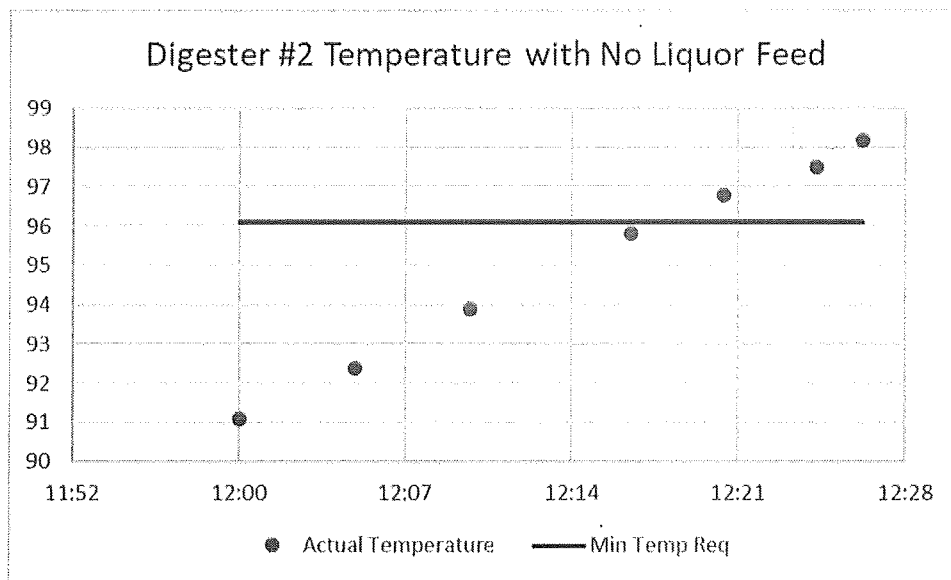
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The required temperature changes were met based on the attached data.

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