

## **SIGHT PORT FAILURES ON COMBUSTION CHAMBERS IN SPENT ACID REGENERATION (SAR) FACILITIES**

Findings following an operational failure of several site glass ports on combustion chambers at operating spent acid regeneration (SAR) plants established the root cause as over-heating of the combustion/decomposition vessel. The sight port nozzle is particularly sensitive to the combination of internal refractory and external insulation. If external insulation is excessive and/or internal refractory is minimal the result is overheating of the metal surface of the combustion chamber/decomposition furnace. Failure of the site ports and surrounding metal shell can result. Collateral damage to the refractory can further damage the metal shell.

The relevant engineering data for determining the correct insulation thickness are presented by MECS in the basic engineering drawings and specifications. Most specifically, the Decomposition Furnace Piping and Instrument Drawing (MECS drawing number 321-108) indicates the appropriate design parameters for the proper combustion chamber shell temperature. This is required for proper operation of the SAR process.

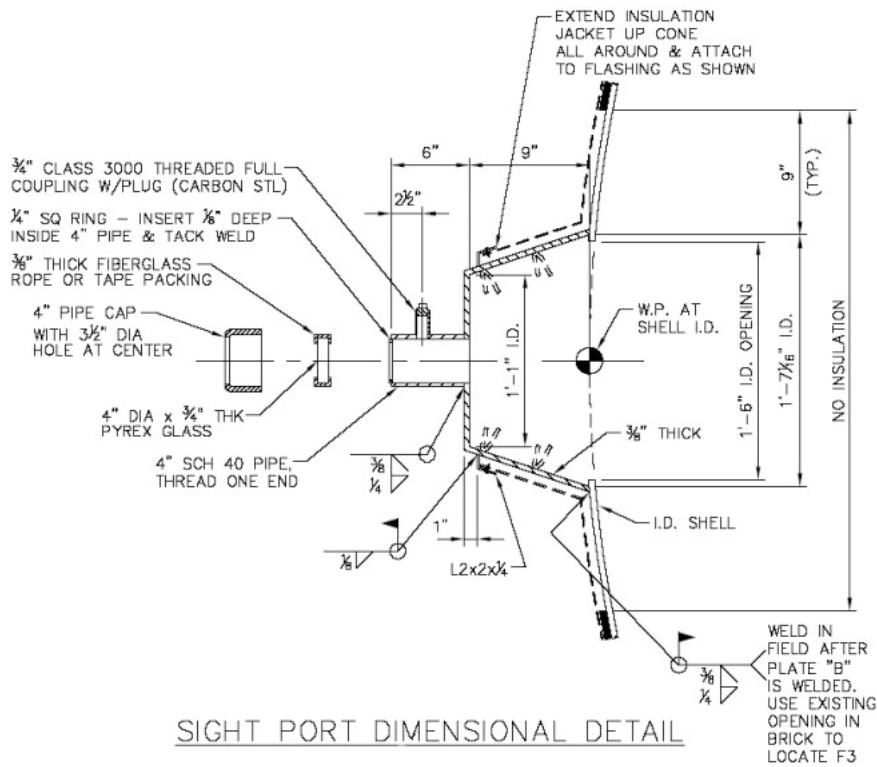
To further reduce the risk of overheating the combustion chamber shell, MECS has re-designed the sight glass detail and associated refractory lining. Sketches attached highlight those changes. These details will yield a more robust site port design that is less likely to overheat during operation.

Owners are advised to review this information carefully for compliance during detailed design and construction of their combustion chamber. Should you have any concerns or questions, please contact MECS.

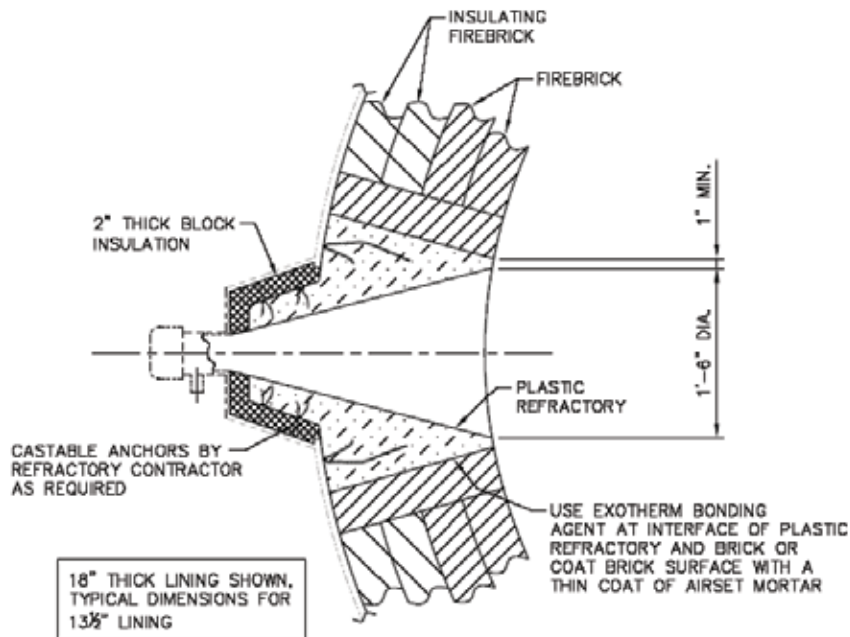
NOTE: Continuous operation of the plant/instrument air to these site ports is also critical to sustained, successful operation.

Two pages attached:

**Sight Port Dimensional Detail**  
**Nozzle "F" Detail**



SIGHT PORT DIMENSIONAL DETAIL



NOZZLE "F" DETAIL