Item #170121
6/14/17

Circulating Dry Scrubber

Failure September 29, 2016

In-Service May 6, 2017

Circulating Dry Scrubber ("CDS") Purpose

- Removal of Sulfuric Acid Mist and Mercury
  - Removal of SO2, SO3, HCl & Hg
- Regulations Originally:
  - Clean Air Interstate Rule (CAIR)
  - Clean Air Mercury Rule (CAMR)
- Current Regulations
  - Mercury and Air Toxics Standards (MATS)

Failure & Demolition

- Exoskeleton & coating improvement project scheduled during the outage to begin on Oct. 3, 2016
  - Concern identified due to venturi sleeve failure Nov. 2015
- Vessel failure – Sept. 29, 2016
  - Cause – corrosion & erosion
- Crane Procurement
- Hurricane Matthew
  - precautions taken prior to Oct. 7 & 8, 2016
- Demolition complete Dec. 31, 2016

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Vessel Design Considerations

- Root Cause of Failure
- Safety
- Risk
- Timing
- Cost considerations
  - Generation costs
  - Construction costs

Design Selection

- Babcock Power-OEM
  - Design in hand with some modifications to mitigate corrosion & erosion – Hastelloy liner (C-276) & coating
  - Increase rigidity of the vessel
  - Model prepared and modified to incorporate modifications for the new CDS
    - Thielsch Engineering and 3rd Party Sargent & Lundy Verifications

RFP & Bid Awards

- GRU prepared scopes of work: cone construction, vessel fabrication & construction of the new CDS
- RFP’s sent out, received and evaluated
- Bid awarded for cone construction Oct. 2016 / Bids awarded for fabrication & construction Jan. 2017

CDS Vessel Improvements

- Structural Integrity
  - installed stiffener package
- Corrosion Prevention
  - installed Hastelloy C-276 liner
  - applied Duromar HPL-2221 coating
  - Addition of single centered water lance for low load operations

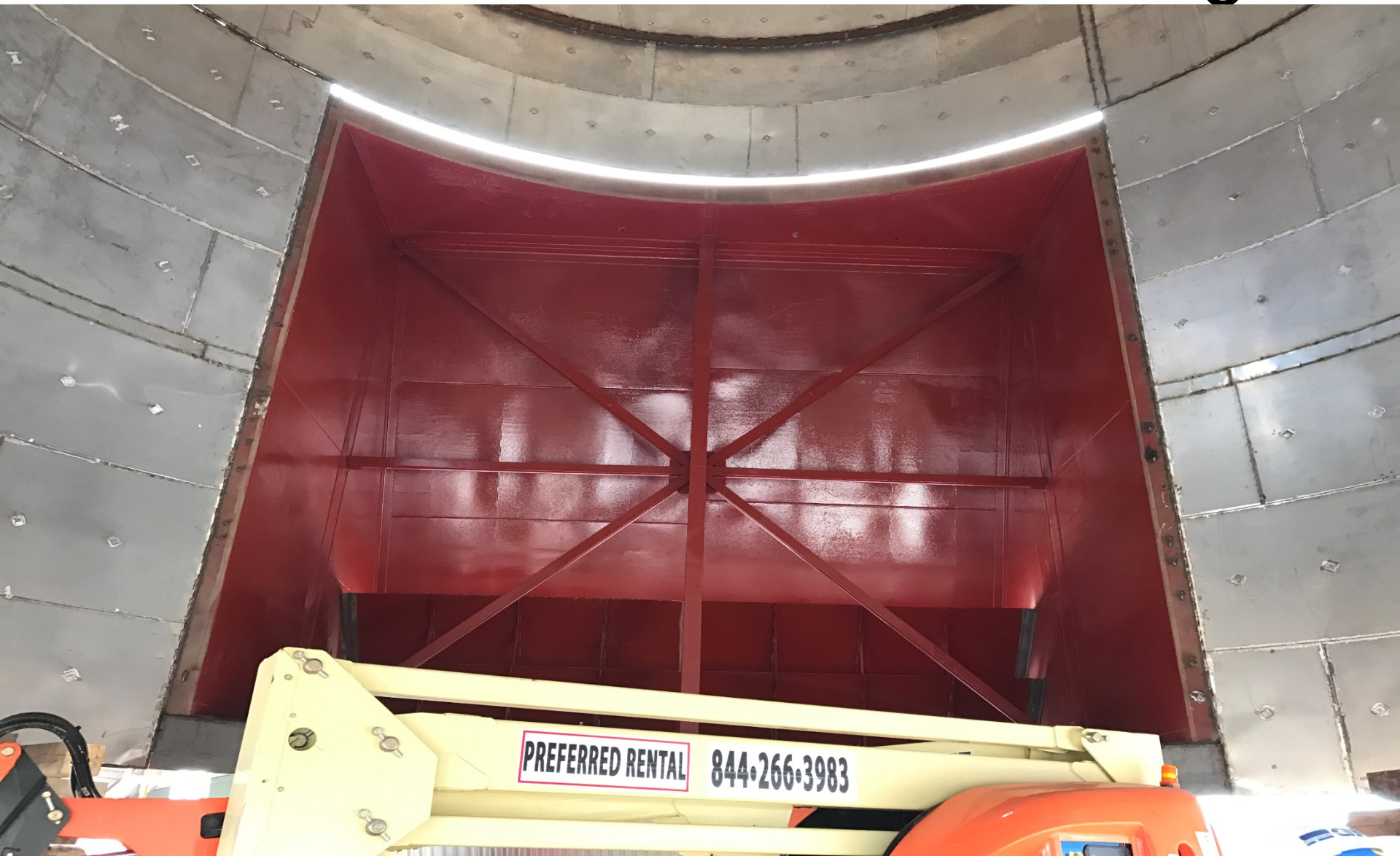
Structural Integrity

Structural Integrity

Corrosion Prevention – Hastelloy C-276

Corrosion Prevention – Hastelloy C-276

Corrosion Prevention – Duromar HPL-2221 coating



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CDS Equipment Improvements

- Three remote capability water lance valves
- Center (south) water lance for low load ops
- Additional view ports ease of inspections
- Enlarged man-way ease of access
- Spider system access for internal inspections
- Preventative Maintenance process modifications

Internal Business Improvements

- A more thorough & disciplined vetting of design
- 3rd party vetting of design
- Identification of risks and mitigation measures

CDS Estimated Investment Costs

- Demolition * $1,550,000
- Construction * $4,500,000

- **Total** **$6,050,000**
- *** Estimated**