



## **Coker Unit Pascagoula Refinery Coke Drum Vent Near Miss**



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**May, 2007  
Coking.com Seminar  
League City, Texas**

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## **Pascagoula Refinery**

Pascagoula Refinery – Est.  
1963

- 330 MBPD Crude
- 80 MBPD FCC
- 105 MBPD Coker
- 70 MBPD Hydrocracking
- 100 MBPD High Pressure Hydrotreating
- Integrated Chemicals Production

1350 employees (excluding contractors)





## Incident and Injury Free

- Safety Culture – Zero is Attainable
- Reliability Culture – safety/reliability connection
  - Continue to learn from incidents
  - New Focus to learn from near misses
  - Reliability Opportunity Identification- recognize and act on the potential hazards before they become an incident.



## The Incident

### Normal steps

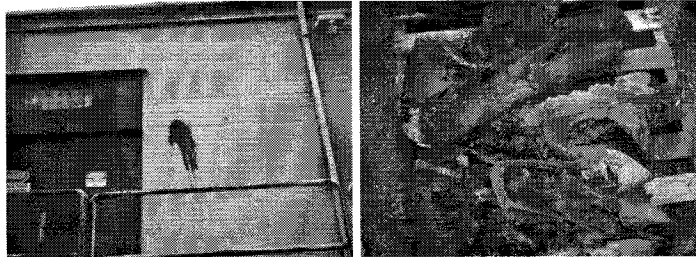
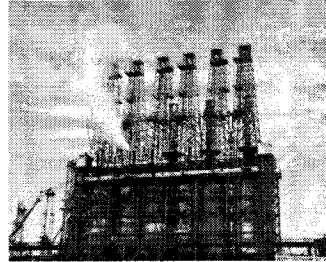
- Drum routed to blowdown during quench
- Pressure in drum below 5 psig, open coke drum vent, close line to blowdown
- Pressure in drum below 2 psig, open top head

### Abnormal Situation

- Drum Pressure began to increase
- Driller noted that no steam was coming from vent
- Plug ejected from vent when drum reached 20 psig



## Material Ejected From The Vent



## Risks Highlighted by the Event

- Vent discharge is located at an elevation of about 140 to 160 feet
- Muffler on vent is designed for 15 psig, much lower than PRD on most Coke Drums
- Drum PRD's designed to discharge into high pressure systems may be blocked prior to opening the vent to reduce the risk of reverse flow.
- Procedures did not exist to address a plugged vent scenario
- Plugged vent scenario not discussed as part of Coker plant HAZOP



## Contributing Factors

- Mufflers were installed on the vents. Muffler internals increase potential for accumulation of plugging materials
- Mufflers were 24 years old. Inspection limited to external integrity.
- Risk of vent plugging missed during HAZOP reviews
- Normal venting carries coke dust, moisture and oil into vent
- Blowbacks can deposit large quantities of coke in the vent
- Muffler does not have instrumentation to monitor pressure drop. Material can accumulate and then shift into a complete plug



## Follow up

- Near Miss Incident investigation underway
- Interim procedure created to define actions for a plugged vent
- Add this incident to HAZOP review sheet
- Communicate to Chevron and Industry.
- Muffler now designated with a 15 year end of life.
- Consider routing vent discharge to a more contained location



## Summary

- Plugged vent scenario is possible
- Evaluate the potential hazards
- Create a response procedure
- Assign a reasonable life expectancy to equipment, take action
- Evaluate other mitigation steps



## Q&A

Follow-up Discussion:  
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