

Burnaby Refinery Flare Management



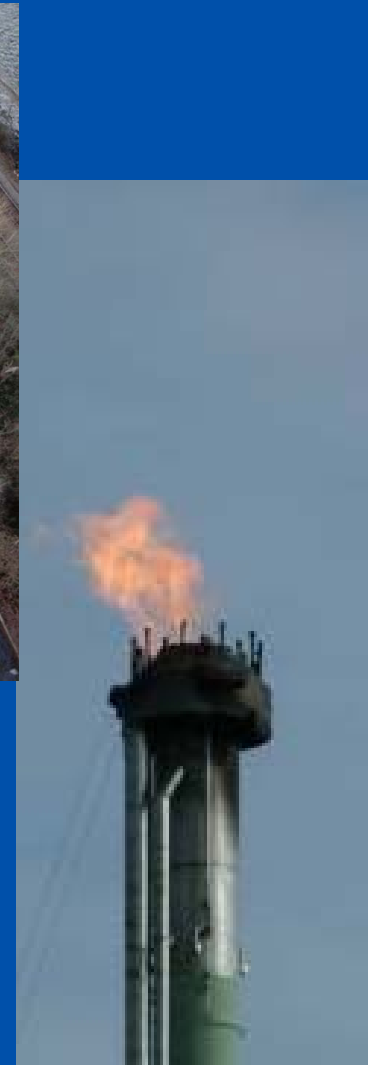
CAP Presentation, September 13, 2012

Flare Management



Overview

- A flare has always been in place at the refinery as it is an essential safety device
- The purpose of the Refinery “Relief System”, including the flare, is to collect and safely burn excess hydrocarbon and other gases resulting from unit conditions/upsets and/or emergencies.
- Process equipment turnarounds are also sources of flammable vapours. Vapours are purged to the relief system prior to opening equipment to the environment.

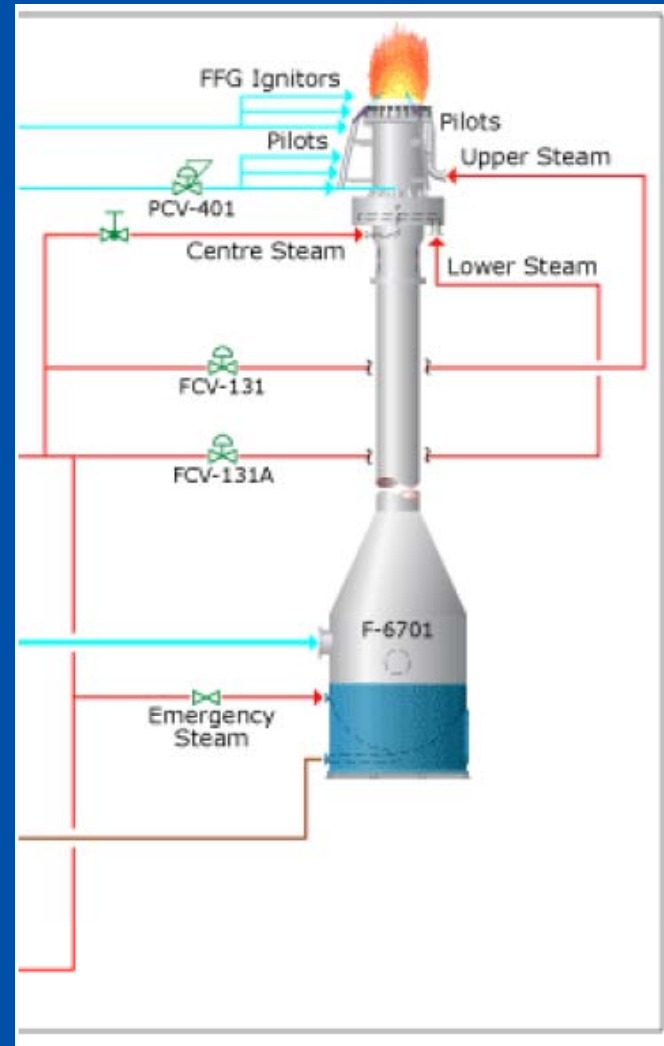


Flare Management



What's Included?

- Pilot (natural) gas
 - Ignitors (electric spark ignitor and flame front generator)
 - Steam
 - Purge flows
 - Emergency flow
- The flare system is designed to burn vented hydrocarbon vapours in an elevated stack efficiently with a minimum amount of smoke.
 - During a plant wide emergency, the flare may smoke, since steam supply is restricted to ensure an adequate steam supply to the remainder of the refinery during an emergency.

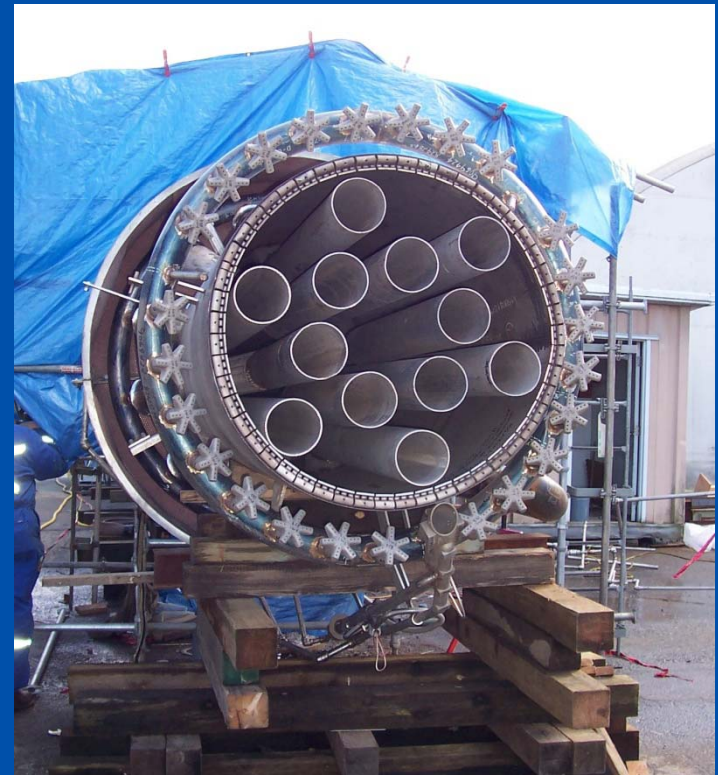


Flare Management



Background

- The flare services the entire process area of the refinery (Area 2)
- Flow meters were added in 2006
- The flare tip was replaced 2008
 - The current flare has a 'velocity seal tip, smokeless combustion' flare tip
- The flare is a part of Chevron's Air Permit GVA0117, issued by Metro Vancouver.
 - Includes maximum flow
 - Opacity limit



Flare Management



Emissions

- SO_x, NO_x, PM [particulate matter - smoke] (~1% of total refinery emissions)

During regular operations...

- Generally small looking flame; small % of total refinery emissions

During maintenance turnaround conditions...

- Generally larger looking flame; more emissions from the flare itself, but overall refinery emissions are lower than regular operation

