

TECHNICAL ZOOM: FLARE ERECTION

The highest point in Qatar is not a mountain or a skyscraper but a flare, 200 meter high, newly erected by QGX on Qatargas Plot. Everyone can see these highly recognizable red and white structures: the structure of the first flare has been completed on April 28th 2007 and the second one is currently under erection. The pre-assembly works have started in Nov



2006 and completion of both flares is expected for end of June.

Gas flares are used for burning off gas and liquids released by pressure relief valves during

unplanned over-pressuring of plant equipment. It acts as a safety device to protect vessels or pipes from over-pressuring, just like the spout on a tea kettle when it starts whistling as the water in it starts boiling. Whenever plant equipment items are over-pressured, the pressure relief valves on the equipment automatically releases gases (and sometimes liquids as well) which are routed through large piping runs to the flare. The released gases and/or liquids are

burned as they exit the flare tip.

The 2 flares are common to QGX and QCS Plants. One will be used for low-pressure gas and the other one for high-pressure gas. When the flares will be in service, access will be prohibited within a 400 m radius of the flare due to thermal radiation.

Each flare is made of:

- A derrick (steel structure) which is the same for both flare.
- One or several risers (pipes) standing in the middle of the derrick.
- Flare tips (burner)

The derrick is made of 13 elements, for a total weight of 700 tons. The base is a 30 x 30 m square. At the top the derrick is a 8.8 x 8.8 m square.

Each element is pre-assembled on the ground prior to lifting with all the accessories (platform, ladder, guides for risers, radiation shields etc.). The elements are then erected using a 500 Tons crane for the first 70 meters a 1,250 T crane beyond. The 1,250 Tons crane is used in two different set-ups depending on the height of the derrick. The crane is made of 2 booms, 108 meter long each.

As the crane cannot be used when the wind speed exceeds 6m/s, the erection has been delayed due to strong winds

during the past few weeks.

The different elements are bolted together. Instead of using conventional scaffolding and work platforms where workers can stand to bolt the flanges, CTJV has called a high specialized "erection gang" from Italy. The team consists of 5 "climbers". They are equipped with harness and hooked on lifelines. They move themselves directly on the steel structure or by using portable



ladders to go up and down.

The risers: one of the flare will be equipped with 4 risers (diameter ranging between 60" and 70") and the second one with one riser (diameter 62") only. Risers are erected in the middle of the derrick. They are made of several parts which are progressively winched up. Parts are bolted together and some removable platforms are foreseen in order to allow lifting lugs hook and unhook at elevation 8 meter, riser flange bolting and unbolting at elevation 22 meter and lifting lugs hook and unhook at elevation 31 meter.

The flare tip stands at the top of the riser. They are 5 meter high each.

J Cranga



Very special thanks to Christophe LAQUEL, Area Superintendent Offsite QGX for his explanations and pictures.



**Pictures taken from
the newly erected flare
on May 24th 07**

**From top to bottom:
QGX, QCS and RGX**



*Thanks Corrado for this
great climb.*