Portland market report

A REFINERY - IT'S JUST A GIANT EFFIN KETTLE INIT

October update

It was 20 years ago this autumn that a fresh-faced Portland started his working career at the now sadly closed Coryton refinery. Very little in early life prepares you for the world of work and in Portland's case, absolutely nothing had prepared him for the world of work in south Essex. A hitherto quiet and provincial existence was to be suddenly and entirely annihilated by the brash Essex girls and boys of Tilbury, Rainham and Basildon. In fact the first conversation that Portland had back in September 1994 was with a refinery scaffolder – a man who had the astonishing ability of not only placing profanities between words but also within them. However, that first conversation made a lasting impression, for it was the scaffolder who most effectively summarised how a refinery worked; *"it's just a giant effin kettle init"* he said, and that indeed is what refineries were in the 1990s and pretty much what they remain 20 years later.

Every single refinery in the world has a Crude Distillation Unit (CDU) and into this unit is pumped crude oil where it is heated and boiled – just like a "giant effin kettle". Those who paid some attention in chemistry lessons may remember that liquid mixtures will separate into their component parts when they are heated and this is what happens to oil, which in its crude form is a latent mixture of all the different grades of fuel (petrol, diesel etc) that a refinery produces. As the temperature inside the Kettle (CDU) increases, the lighter products rise to the top, whilst heavier products separate and sink to the bottom.

The king of the refinery

So at the top of the Kettle (which is actually a heated steel column), we have the products with the lowest boiling points (ie, they boil first at "lower" temperatures), such as liquid petroleum gases (propane and butane), gasolines and naphthas (used in the petro-chemical industry). Then we have the heavier products with higher boiling points, such as kerosenes (jet fuel) and distillates (diesel and heating oil). And the process continues all the way down the column with residual fuels (fuel oils for ships and power stations) coming next, followed by bitumen (for roads), base oils (lubricants) and various special products and waxes at the bottom. Of course most of the products typically have to be treated further to meet legislative requirements (octane boosting, sulphur removal, biofuel blending, odour neutralisation etc, etc, etc – the list is long!) and these extra processes add massive complexity to a refinery. But the Kettle is always *King of the Refinery* and all other units depend upon it.

Different types of crude that go into the Kettle generate different product yields and this affects the price of crude. For example a sweet (North Sea) crude will produce a high yield (>50%) of light-end products (gasolines, naphthas, jet fuels) and these grades typically sell for higher values, meaning that the refinery can generate high income without significant manufacturing complexity (= cost). On the other hand, a heavy and sour crude (Saudi) might only produce 10-15% of light-end products, which means significant further processing is required elsewhere on the refinery to produce the light-ends that the market requires. This obviously pushes manufacturing costs up, which in turn means that sour crudes have to be discounted versus the sweeter crudes on the market.

Poor strategic decisions in the 80s and 90s

AN INDUSTRIAL MONUMENT ON A SCALE THAT IS DIFFICULT TO DESCRIBE UNTIL YOU EXPERIENCE IT IN THE FLESH/STEEL

As we know from previous Portland Reports, refineries in Europe are still stuck in a dreadful mire of buying high priced crude versus selling products at low margins and more specifically, they are faced with over supply of gasoline versus decreasing demand. Much of this was due to poor strategic decisions in the 1980s and 90s and because of this many refineries are expected to close over the next 5-10 years. As we know, this should (but rarely does) worry UK and European consumers who perhaps need reminding that crude oil has absolutely no value nor use if it cannot be refined.

Furthermore to visit a refinery is to visit an industrial monument on a scale that is difficult to describe until you experience it "in the flesh/steel". In its heyday, Coryton was daily dispatching 500 road tankers, 10 – 12 trains, 6 ships and 20m litres of refined product down the United Kingdom Oil Pipeline. It had 150 storage tanks (the biggest of which held 100m litres) and produced about 27.5m litres of fuel per day. That's circa 19,000 litres per minute if you prefer – not bad for a "giant effin kettle"…!