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Argus News and Analysis:

Argus LPG World - US LPG heads south

The US has become the world's largest LPG exporter - and Latin America is a key market for US exporters. The first part of a regional trade flow survey looks at how the surge in US LPG cargoes impacts the import trends of Brazil, Chile and Ecuador.

US Gulf coast LPG export volumes continue to set new records, moving toward even higher growth, while large volumes are moving to Caribbean and South American markets.

Latin American buyers account for around 29mn t/yr of global LPG demand (see p2). The region's domestic cooking and heating sector alone accounts for more than 16pc of global heating and cooking demand - second only to Asia-Pacific.

Mexico remains the largest importer of US LPG, at 8.6mn t last year, although the country is seeing demand gradually contract. Brazil is the second-largest importer of US LPG at 7.3mn t in 2013, while Venezuela and Argentina consumed a combined 4.3mn t - although demand in these countries is largely met by domestic refinery production.

Argentina's traditional role as a large supplier to Brazil and Chile has changed significantly in recent years, as both countries have turned to the US for long-term supply.

The huge rise in US LPG shipments to Latin America has brought a need for additional pricing mechanisms. South American deals are traditionally priced on external bases, such as European cif Amsterdam-Rotterdam-Antwerp (ARA) assessments or US fob Mont Belvieu. The new trend appears to be shifting to a stronger focus on fob Mont Belvieu - but this carries certain risks. US LPG price spikes last winter demonstrated that US prices ultimately reflect US domestic fundamentals. There is no liquid spot market at present using a purely Latin American price benchmark - such as a cif Brazil assessment.

Brazil is a major consumer and absorbed the bulk of US LPG exports in South America, followed by Chile. The two countries were reliant on Argentinian supply, which has restricted exports to cover domestic demand since earlier this decade. Ecuador is the third-largest importer of US LPG, but aims to reverse its import demand to zero in the next few years.

Brazil turns to US imports

Brazilian LPG imports have been relatively flat over the past five years at around 1.5mn t/yr, equivalent to 34 very large gas carriers (VLGCs) each year or 2-3 VLGCs/month. But Brazilian deliveries of US LPG supplies have increased sharply in the same period.

Brazil absorbed 111,000t of US LPG, or 8.5pc of its import needs, in 2009. But in January-May 2014 US cargoes made up a massive 78pc of Brazil's LPG imports, according to US government agency the EIA and Brazil's petroleum sector regulator the ANP. The US shipped 590,000t to Brazil in the first five months of this year, or 13 VLGCs. Brazil's remaining 161,000t of imports in the period came mostly from neighbouring Argentina or west Africa. Brazilian imports so far this year are 16pc higher compared with 2013 and more than 22pc higher than the five-year average.

Brazil's state-controlled oil company Petrobras has reserved loading window slots at US Gulf coast terminals owned by US midstream operators Targa Resources and Enterprise Products Partners. But it also relies on spot shipments. US LPG cargoes take an average of 19 days to reach storage facilities in Brazil's Suape port and 23 days to Santos port. VLGCs have lately discharged at both facilities, but sometimes exclusively discharge at Suape.

Petrobras has this year played a key role in setting indications for Houston to Flushing (Europe) spot VLGC freight costs. This transatlantic freight rate has become the benchmark spot freight rate for shipments from the US to parts of South America, especially Brazil. The general surge in spot VLGC freight rates over the past few months has not been advantageous for Petrobras, which needs the freight component of its import

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costs to be as low as possible. But an early September fixture on the VLGC Aurora Leo reported by shipping brokers at $97/t for Houston/Flushing is the softest price level achieved in months (see p11). A volatile freight marketplace pegged the same spot rate for another early September cargo aboard the VLGC Aurora Taurus at $120/t in July.

Brazil's strong demand is complemented by relatively steady domestic production of around 5.4mn t/yr, with roughly two-thirds of production sourced from refineries and the remaining from natural gas processing capabilities.

Chile cultivates new import sources

Argentina's role as Chile's traditional LPG supplier has faded over the past few years. Chilean demand, which contracted slightly to 1.7mn t last year, brought an end to 10 years of steady expansion, although the country remains a key regional importer.

Chilean firm Gasmar has agreed a term supply deal with a multinational trading firm. But the country has also needed a few spot cargoes throughout the winter peak demand season.

LPG exports from Argentina were stopped from going to a gas processing plant in Cabo Negro, Chile, as early as 2004. The plant is close to Punta Arenas, where the bulk of Chilean oil and gas is produced. The Cabo Negro complex, which is owned by Canadian methanol producer Methanex, will see the relocation of two 1mn t/yr petrochemical production facilities to Geismar, Louisiana, where US midstream operator Williams Partners owns a shut-in petrochemical complex.

Chile's dependence on US LPG started in 2010 when it imported 143,700t for use during the country's winter demand months of June-September. US imports more than doubled to 289,645t the following year, and reached more than 541,000t in 2013. Chile averaged 135,000t/month of US LPG shipments in the first five months of this year, or 1.5 VLGCs/month. If Chile's US imports continue at this level, total imports this year could reach around 862,000t.

Chile recently joined the list of Enterprise's term customers with Gasmar's 10-year deal with a trading firm that sources cargoes from Enterprise's Houston Ship Channel export facility.

Chilean buy tenders typically call for delivery to Quintero port, with an option to call at San Vincente bay. Spot tenders issued throughout this year sought pricing on a cif ARA basis. A VLGC that travels along the Magallanes route from the US round Cape Horn would take twice as long to reach its destination compared with a VLGC transiting through an expanded Panama Canal in 2016. The canal route takes about 17.5 days, while the longer route increases the journey to 37 days.

US export cargoes over the past few months have all approached Chile's Quintero port via the Strait of Magallanes, as the fleet of four Panamax VLGCs, the Clipper Sirius, Clipper Victory, Karoline N and Ronald N have had prior engagements.

Ecuador focuses on infrastructure

The bulk of US LPG exports transiting the Panama Canal are destined for Ecuador's expanding 1.05mn t/yr LPG market. The country is a key importer of US LPG, but volumes are likely to stop in 2016 when Ecuador aims to become an LPG exporter after the planned 200,000 b/d Pacific refinery starts operations.

Imports are needed to fill an estimated 840,000 t/yr or 78pc of Ecuador's domestic LPG demand, equivalent to 24 VLGCs/yr. Around 385,000 t/yr now comes from the US, according to the EIA. Ecuador received 125,000t of US LPG in January-May.

State-owned oil company PetroEcuador's recently inaugurated 75,000t capacity marine terminal at Monteverde on the Pacific coast, which connects by pipeline to the El Chorrillo LPG distribution station, should help Ecuador to import, store and distribute LPG.

Key Latin America LPG consumption *'000t*

Country	2013	2012	±% 13/12
Argentina	1,414	1,776	-20.4
Bolivia	330	338	-2.5
Brazil	7,329	7,135	2.7
Chile	1,214	1,810	-10.5
Colombia	481	561	-14.8
Dominican Republic	790	880	-10.2
Ecuador	1,047	1,043	0.4
Mexico	8,625	8,840	-2.4
Panama	359	242	48.2
Peru	1,687	1,341	25.8
US Virgin Islands	205	350	-41.4
Venezuela	2,969	3,149	-5.7

— *Argus/WLPGA*

Local market participants expect the start-up of the hub to reduce PetroEcuador's LPG storage bill by $40mn/yr, because it will remove the need for floating storage. The country used to rely on a VLGC-sized floating storage unit situated south of Monteverde. But Ecuadorean president Rafael Correa recently officially declared the start-ups at a 65,500t storage site at Monteverde and a 14,200t storage terminal near Guayaquil.

The new storage infrastructure brings total Ecuadorean onshore LPG inventory capacity to 25 days of supply - in case of any supply emergency - from only around four days.

VLGCs can also discharge at Guayaquil port. Cargoes can move from the Houston Ship Channel to Ecuador through the Panama Canal, or around Cape Horn. The shorter journey takes about 10 days, while transit around Cape Horn amounts to around 45 days.

Ecuador has purchased import cargoes on a spot basis since 2011, after the expiry of a supply contract with a trading firm. PetroEcuador has since awarded a 5.84mn bl contract for LPG to a different trading firm.

The country's domestic production of around 231,000 t/yr should increase after upgrades to PetroEcuador's 110,000 b/d Esmeraldas refinery. But the expansion programme is far behind schedule. The facility last month started to severely limit operations in preparation for a 13-month partial shutdown that will leave it operating at 50pc capacity until 20 August 2015, so import demand in 2015 is likely to remain steady.