

BUNKERSPOT

INDEPENDENT INTELLIGENCE FOR THE GLOBAL BUNKER INDUSTRY

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BUNKER FUEL PERFORMANCE: Meeting environmental challenges

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BUFFALO MARINE SERVICE, INC.

Leading the way and dedicated to exceeding expectations

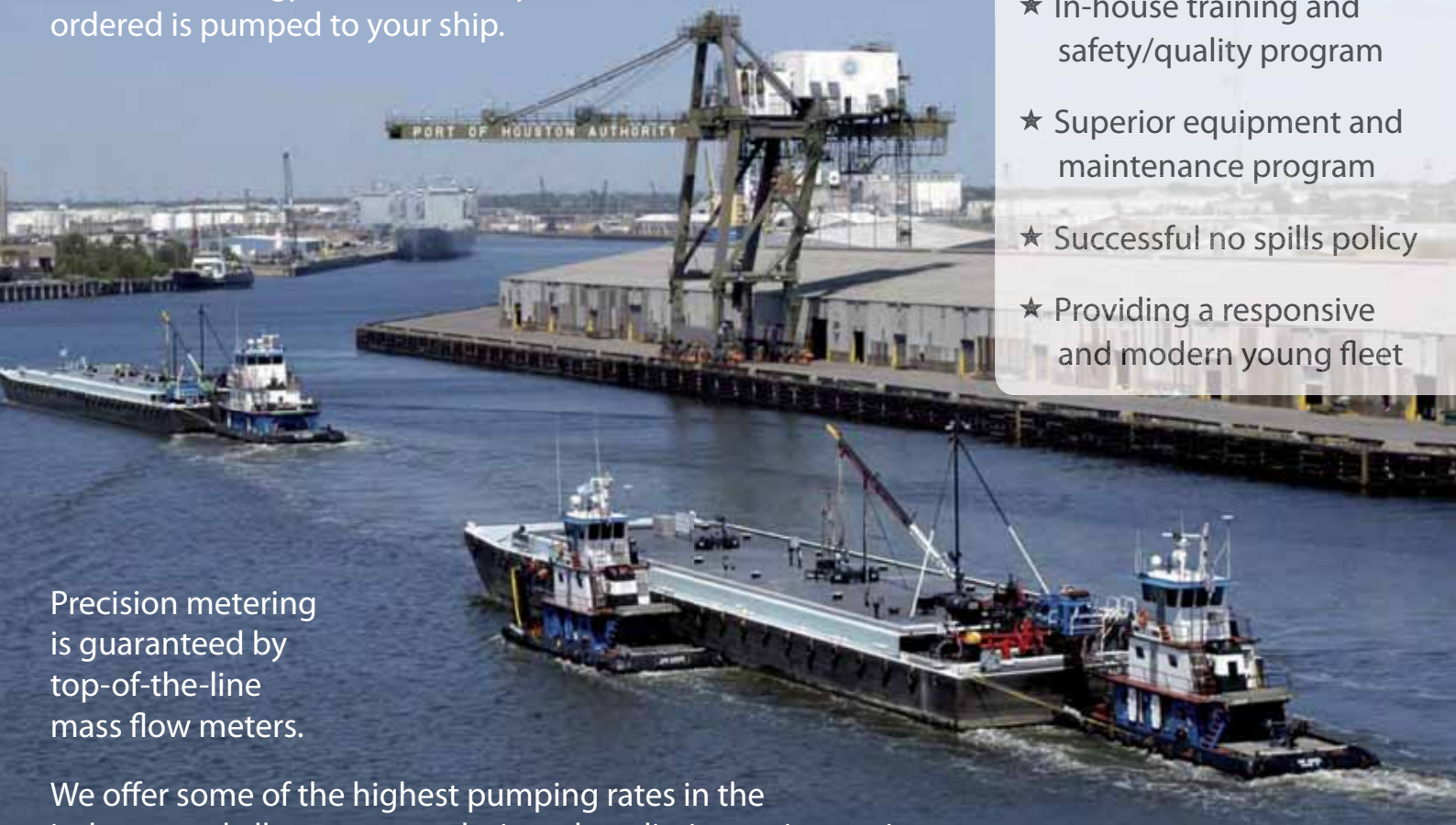
Committed to the accurate and timely delivery of bunkers from Corpus Christi, TX to Mobile, AL.

Our fleet of bunker barges are equipped with the latest in meter technology to ensure every barrel ordered is pumped to your ship.

Precision metering is guaranteed by top-of-the-line mass flow meters.

We offer some of the highest pumping rates in the industry and all systems are designed to eliminate air entrainment.

- ★ Exceptional service since 1935
- ★ In-house training and safety/quality program
- ★ Superior equipment and maintenance program
- ★ Successful no spills policy
- ★ Providing a responsive and modern young fleet



Serving the Ports of Houston, Galveston, Freeport, Texas City, Corpus Christi, Port Arthur, Lake Charles, LA, Pascagoula, MS and Mobile, AL. Recently recognised for completing 5000 spill-free bunker jobs in the Bolivar Roads Anchorage.

Safety First at Buffalo Marine

Safety and the environment are top priorities at Buffalo Marine. All Buffalo vessels meet and exceed USCG-mandated safety requirements.

Buffalo Marine Service, P.O. Box 5006, Houston, TX 77262-5006

Tel: (713) 923-5571 ★ Fax: (713) 923-5304 ★ Website: www.buffalomarine.com

Mass appeal

Buffalo Marine tells Bunkerspot how the use of precision metering technology can help to manage expectations and eliminate disputes

On 26 August 2009, Buffalo Marine Service's *M/V San Joaquin* pushing the *T/B Buffalo 401K* pumped 1,500 metric tonnes (mt) 500 centistoke (cst) bunker fuel to the *M/V Maersk Wyoming*. To the casual observer, there was nothing extraordinary about this particular bunker job; however, upon closer inspection, both vessels were monitoring the mass flow of bunkers via mass flow *Coriolis* meters. After seven hours of pumping, the Captain of the *M/V San Joaquin* printed out a fuel ticket for the 1514.39 mt that had been pumped by the *T/B Buffalo 401K*. Meanwhile, the *M/V Maersk Wyoming's* Chief Engineer compared the meter ticket against the reading on his vessel's mass flow meter and acknowledged that he had received 1515 mt – a 0.05% difference.

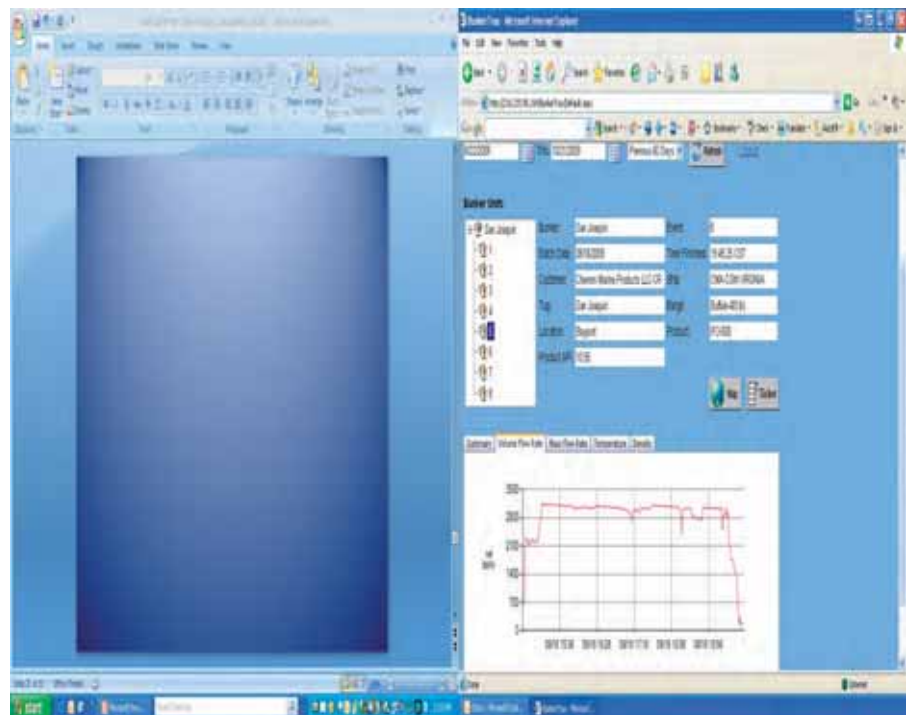
The transparent nature of this operation reinforced the value of the recently-installed mass flow meter and *FuelTrax* system aboard the *T/B Buffalo 401K*. The real time temperature and density readings recorded by *FuelTrax* validated that the volume was not inadvertently boosted

by entrained air. More importantly, the measurement of the fuel in mass ensured that the bunker fuel's characteristics – such as density – did not create an unreliable or questionable volume. This 'certainty of measurement' allayed any concerns over the barge owner 'skimming' fuel for its own benefit or the supplier providing a lesser quality of product.

Mass flow meters in conjunction with *FuelTrax* are by no means a panacea. Yet, the employment of such a system has already substantially reduced delivery disputes and shortage claims. In essence, it clearly represents Buffalo Marine's commitment to employing proven technology for the benefit of its customer base.

Over the last two decades, Buffalo Marine has recognised that it is imperative to accurately measure and document bunker deliveries. Thus, before the advent of reliable and robust mechanical measurement devices, bunker crews were constantly reminded to properly gauge tanks, re-gauge and re-gauge yet again so that there was no doubt as to the amount of bunker fuel aboard the tank barge. Despite this fastidious approach to documenting the number of barrels on hand or the amount of

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'Buffalo Marine Service quickly reaped the benefit from this investment as short-delivery claims ceased to exist when bunkers were delivered from a metered barge'

barrels transferred from the bunker barge, it was not uncommon for personnel to question the accuracy of the gauge readings or even demand to personally gauge the bunker barge tanks. In other instances, gauge readings taken by the crews aboard the vessels in receipt of bunkers were even wary of their own readings due to the possibility of significant air entrainment during the course of the loading.

As Buffalo Marine's President and CEO Pat Studdert recalled: 'We knew there had to be a better way to convince our customers that what was ordered, was delivered.' That sentiment drove Studdert to evaluate the metering capabilities of Buffalo Marine's blending tank barge – the *Buffalo Star*. This particular barge,

equipped with a kinematic static mixture, was designed to provide precision blended fuel products from a combination of its IFO 380 centistoke (cst), cutter stock and marine gas oil tanks. The brains of the blending operation consisted of **Emerson's Micro Motion** Coriolis meter and e-blend control system.

Studdert recounted: 'Given the success of the mass flow meter system aboard the *Buffalo Star*, it stood to reason that a similar system could be installed on our newer bunker barges.' Yet, the infrastructure costs and regulatory requirements associated with non-self propelled tank barges led Buffalo Marine to consider mechanical meters.

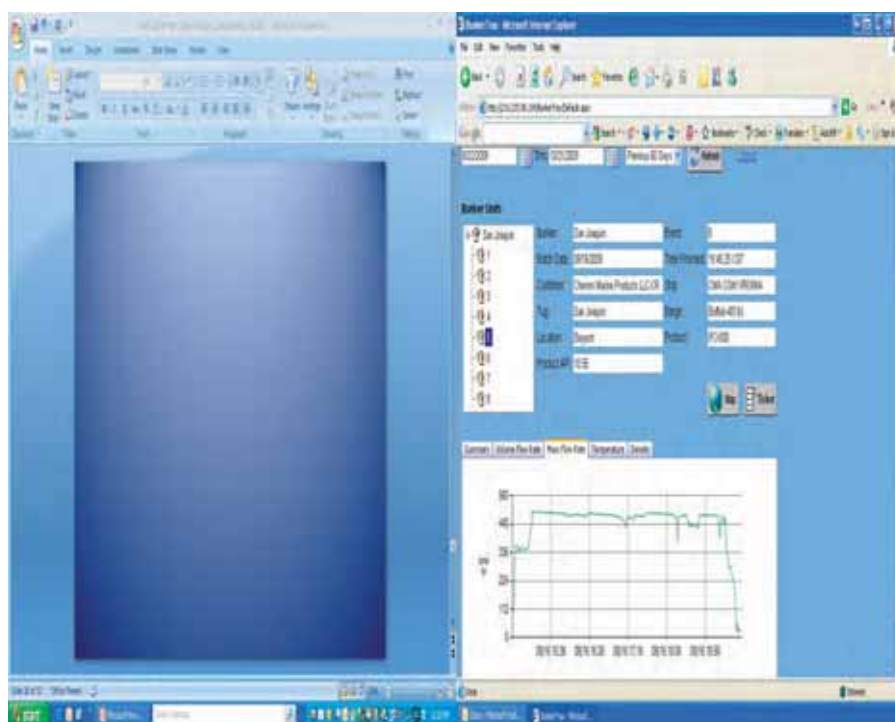
'The relatively complex nature of the *Buffalo Star's* piping systems and mandate that the power and control systems associated with the meters must be self-contained and intrinsically safe were a bit daunting,' commented Studdert. Eventually, in order to avoid extensive shipyard refitting and design modifications to accommodate a control booth and separate power source, mechanical meters (i.e., positive displacement) were placed on all new construction bunker barges in 1997. The meters also required a robust air

eliminator system and were temperature compensated to enhance the system's accuracy.

Like any new system that is subjected to the rigours of the maritime environment, the strainers, air eliminators and actual meter required routine maintenance. This was of utmost importance with respect to the calibration of the metering system since hard landings or any other 'shocks' suffered by the tank barge could easily knock the tumblers out of alignment. As Studdert noted: 'The additional maintenance measures and calibration schedule was well worth it. Our bunker crews possessed a tool that produced a meter ticket that documented what had been delivered to the ship.' More importantly, the relatively simple nature of the system made it easy for the personnel aboard the vessel receiving bunkers to grasp how the meter operated and recognise that it was nearly impossible for air entrainment to artificially boost the barrels delivered. This went a long way in allaying any concerns over short deliveries.

Buffalo Marine Service quickly reaped the benefit from this investment as short-delivery claims ceased to exist when bunkers were delivered from a metered barge. However, Studdert was not quite convinced that the mechanical meters were an optimal solution. After all, the *Buffalo Star's* mass flow meters continued to perform in a flawless fashion without large demands in maintenance and routine calibration. His instincts proved to be correct when a team comprised of Emerson and **Nautical Control Systems** approached Buffalo Marine about the prospect of installing a mass flow meter on a bunker barge.

What caught Studdert's eye was the fact that the computer monitoring system was installed in the pushboat's wheelhouse. Thus, there was no need for a separate control room and accompanying power supply on the tank barge. This reduced the amount of additional equipment on the bunker barge and permitted wheelhouse personnel to monitor the mass flow of bunkers as if they were located on the bunker barge with the tankerman. The key to the system was the umbilical cord that connected the FuelTrax meter on the barge to an independent port on the pushboat. The cord, in turn, provided power from



the pushboat's generator to the meter. All of this was synched up to a FuelTrax control system which included a separate interactive computer screen for the benefit of personnel monitoring the evolution from the wheelhouse.

Studdert knew he had a 'winner' of a system when the Captains informed him that the mass volume data depicted on the FuelTrax wheelhouse monitor permitted them to better gauge the bunker discharge process. 'Previous concerns over the tankermen properly using the mechanical meter on the tank barge were eliminated. Additionally, bunker tankermen had greater confidence that the digital readings depicted by the FuelTrax system were more precise and less vulnerable to inaccuracies that were related to mechanical meters.' In short, tankermen soon realised that their verification gaugings at the end of the bunker job were always in line with the data from the mass flow meter. Consequently, when personnel from the ship that had just received bunkers were presented with a mass flow meter printout from wheelhouse personnel, it was quickly understood that the meter had taken into account the properties of the fuel delivered (i.e. temperature, density). Therefore, the accuracy of the data was sacrosanct. As one veteran Buffalo Marine Captain put it: 'Mass is mass is mass. Unless you change the laws of physics, the amount recorded by the Coriolis meter is what we pumped to the customer!'

Buffalo Marine personnel were also quite impressed with FuelTrax' Bunker Trax menu. During any portion of the bunker transfer process, pushboat personnel, dispatchers at the main office or any authorised person equipped with a laptop and internet connection could log into the system and access the particulars of any given bunker job. The impact of this data was profound as it enabled personnel to monitor pumping performance, temperature trend lines and density consistency throughout the course of the bunkering evolution.

Studdert recalled a recent bunker job where the ship's Chief Engineer was convinced that it was impossible for the barge to have pumped at a nearly 500 mt/hour rate.

'Our Captain patiently explained to

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him that the rate was consistent with the pump's rating,' recounted Studdert. 'The Chief Engineer countered that the fuel temperature was too low for that as he was convinced that the fuel was no more than 110°F. At this juncture, the Captain pulled up the temperature graph as well as the bunker density chart to drive home to the Chief Engineer that the entire process was transparent and our pumps performed as advertised.

'Once the Chief was presented with this data, he studied it carefully, asked if all of the tow's jobs were this thoroughly documented and then proceeded to sign the bunker delivery receipt without any further comment.'

This type of experience certainly

validates Buffalo Marine's commitment to install mass flow meters and the FuelTrax system on its fleet of bunker barges.

'Perhaps our biggest problem is that the demand for FuelTrax-equipped bunker tows exceeds our supply,' commented Studdert. 'However, we have stressed to our customer base and regional suppliers that while the bunker barges with mechanical meters lack the FuelTrax data history, these meters still provide accurate delivery information.'

As he continues to outfit his fleet of pushboats with FuelTrax systems, Studdert is convinced of the importance of bunker delivery transparency and believes that mass flow meters represent the future of the bunker business.

'All too often, the bad habits and shenanigans that are perpetrated by a few are imparted to the bunker community as a whole – regardless of the port,' said Studdert. 'If I can convince our most sceptical customers that they are in possession of every barrel they ordered with a FuelTrax printout from a Coriolis meter, then I save time, money and, most importantly, positively bolster our profession's reputation.'

