

cutting
edge

WINTER 2012/2013 – Issue 2

WASTE MANAGEMENT NEWS
FOR THE OIL & GAS INDUSTRY
FROM **TWMA**

News

TWMA awarded flagship
Middle East project

Technology Feature

Improving operational and
environmental performance

Our People

Scandinavia region
manager announced

WELCOME

"Every quarter we bring you TWMA's latest news from around the globe and exciting updates on our operations, solutions and people. We hope that you enjoy reading this winter issue and look forward to keeping you informed in the New Year."

Laura Illey, Editor

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FOREWORD

Welcome to the latest edition of Cutting Edge



2012 has been a year of significant growth for TWMA. Following the establishment of our first Middle East base, TWMA has been awarded a five-year contract for ZADCO's unique UZ 750 Project in Abu Dhabi. This project has accelerated our growth plan for the region, generating a significant number of new opportunities which will see our staff numbers exceed 400 in 2013. We look forward to bringing our experience and expertise to what we hope will be the first of many projects in the region.

We are continuing to invest in and improve our onshore facilities which will enable TWMA to expand its solutions offering and deliver a superior service to its clients. Our Peterhead plant is currently being upgraded, and we look forward to welcoming clients to the refurbished facility in 2013.

We have also welcomed new senior staff members on board, including Garry Duncan as Peterhead site manager and Leif Ove Svensen as Scandinavia region manager. The UK and Norway remain as two important strategic regions and our new managers will play a key role in their development.

Looking to 2013, TWMA will have an increased presence at some of the leading events on the industry calendar, including OTC and Offshore Europe, where we will be sharing some exciting company news.

We anticipate that 2013 will be a fantastic year full of opportunity, as we seek to deliver exciting new projects around the globe.

Ronnie Garrick Managing Director

“ TWMA has been awarded a five-year contract for ZADCO's unique UZ 750 Project in Abu Dhabi. This project has accelerated our growth plan for the region, generating a significant number of new opportunities which will see our staff numbers exceed 400 in 2013. ”

TWMA awarded flagship Middle East project

More than 100 jobs created in the UK and Middle East

TWMA announces a significant contract win for Zakum Development Company's (ZADCO) flagship UZ 750 Project at Abu Dhabi's Upper Zakum field, the fourth-largest oilfield in the world.



First equipment load-out for ZADCO's UZ 750 project

Commencing in December 2012, the contract, worth up to US\$ 20million, will see TWMA design, commission and operate an advanced solids control and fluid recovery system for the artificial islands project – the first of its kind in the United Arab Emirates.

The contract is for a period of five years with two one-year extension options.

Over the course of the project TWMA will deliver a range of specialist drilling services,

including the handling, transfer, storage and treatment of both oil-based and water-based drill cuttings.

On winning the contract, TWMA sales director Rob O'Neill said: "Our cuttings handling solutions are leading the way in the field of drilling, making us the ideal partner for ZADCO on a project that has the potential to redefine oil production in the Middle East."

This latest success means that TWMA has accelerated its

global growth plan and is investing a substantial sum in a new onshore support facility in Abu Dhabi, which is due to open in early 2013. The facility will include provision for onshore support services including repair, maintenance and construction, as well as office accommodation and yard and warehousing space.

As a result, a significant number of new positions will be created in the Middle East, including project managers, offshore supervisors, operators and

support staff, with a number of opportunities in Aberdeen also being created to provide associated support services.

"This is a fantastic opportunity for us and we will work closely with ZADCO to develop and deliver a safe and efficient solution to meet and exceed the requirements of working in such a unique environment," continues O'Neill.

"Securing this contract is testament to the benefits of our technology and the commitment

of our people to constantly provide the highest standards of quality and service.

"Globally, our business is going from strength to strength. With recent successes in the US and UK we very much see our relationship with ZADCO as the basis for the future growth of our market-leading services in the Middle East, underpinning our commitment to the region."

TWMA wins UKCS contract with Premier Oil

Two-year agreement with potential for two further one-year extensions

TWMA has secured a substantial contract with UK operator, Premier Oil (Premier), following a comprehensive tender process.

The project, worth an estimated £2million, is already under way with TWMA providing 'skip and ship' services to transport drill cuttings and associated materials produced by Premier's offshore drilling operations on the WilPhoenix semi-submersible drilling rig in the Central North Sea (CNS) to TWMA's thermal processing plant at Peterhead for treatment via TWMA's TCC RotoMill technology. This will continue when the rig moves to the west of Shetland.

The contract will run until August 2014 with the option of two one-year extensions.

On winning the work, TWMA sales director Rob O'Neill said: "On an increasing basis, operators are realising the benefits of integrating a full processing package into their drilling campaigns both onshore and offshore.

"Our TCC RotoMill technology is tried and tested and a perfect fit for Premier's drilling campaigns. The UK continues to be an important region for TWMA and we look forward to working with Premier in what we hope will be the first of many projects."



The WilPhoenix semi-submersible rig

TWMA selected as a finalist for prestigious award

TWMA was honoured to be chosen as a finalist in the Health, Safety, Environment/Sustainable Development Onshore category of the 2012 World Oil Awards, for its mobile TCC RotoTruck technology which enables at-source treatment of non-aqueous base fluid (NABF) contaminated drill cuttings.



Left to right: Judy Nicolson, Ian Nicolson, Carmen Morales, David Hastings, Paula Trigg, Tom Trigg, Megan Dowdy, Adam Lowery

Ian Nicolson, vice-president of Americas for TWMA, says it was an honour for the company to be recognised at such a prestigious event: "This year we have celebrated a range of successes in the US, with the opening of our new manufacturing facility and our ongoing work with Chesapeake. As a small company, to receive this recognition is fantastic."

The World Oil Awards is now in its eleventh year of honouring the upstream energy industry's top innovators and innovations. This year's honourees took home trophies in 16 categories during the gala event held on 18 October 2012 at The Houstonian Hotel.

Improving operational and environmental performance; NADF versus WBDF

Sometimes things are not always as they seem, and the best choices not always intuitive. Take, for instance, the view that water based drilling fluids (WBDFs) are always a better environmental choice than non-aqueous drilling fluids (NADFs), or that enhanced WBDFs will deliver NADF performance.

“ Unlike most WBDF generated and disposed of with drill cuttings, NABF can be effectively recovered for reuse. The TWMA TCC RotoMill and TCC RotoTruck reduce NABF content on drill cuttings outfall to less than 1%, a level which is proven to have a negligible impact on the environment. ”



Increasingly, the higher degree of difficulty wells being drilled today require high-performance NADFs for formation stability, lubricity, temperature stability, solids tolerance, hydrate suppression, protection from dangerous gases and other operational challenges. However, because of the perceived environmental impact of NADFs, some regulators and operators are turning to enhanced WBDFs as an environmentally preferable alternative.

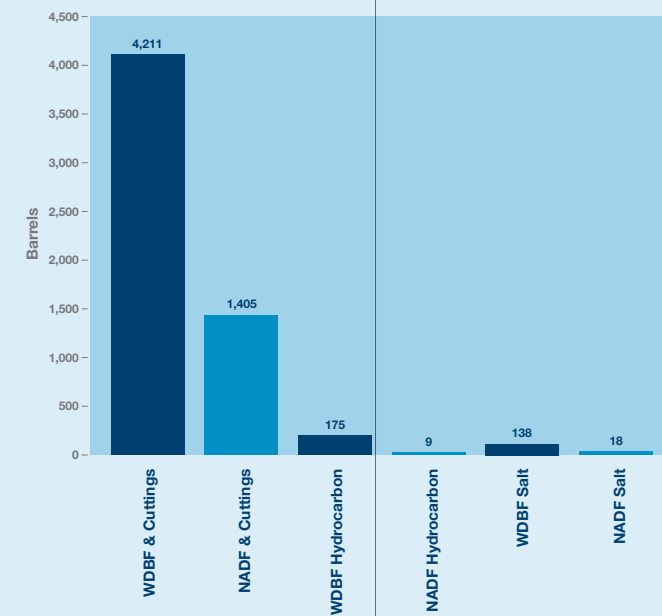
It is true that the continuous phase or carrier fluid of NADF is hydrocarbon, while the continuous phase of WBDF is water. However, utilising TWMA's advanced thermal processing solutions (the TWMA TCC RotoMill and TCC RotoTruck); over 99% of non-aqueous base fluid (NABF) can be successfully recovered. Therefore, the optimum solution in some cases is to drill with NADF and treat the drill cuttings outfall. Not only is this method both operationally and environmentally superior, but operators are able to recoup drilling costs by reusing the recovered NABF which is unaffected by the thermal process.

Nonetheless, many fluids specialists continue efforts to develop WBDF systems with NADF capabilities using salts, lubricants and other additives. Not only do these treatments increase the

environmental impact of WBDFs, but often in one or several aspects the performance still falls short. Then consider the large volume of WBDF generated, compared with the volume of NADF required to perform the same drilling operation.

As an example, consider the use of WBDF to drill 10,000 feet of 8.5" hole; a gauge hole volume of 702 barrels (bbls). Solids removal efficiency (SRE) for WBDF varies widely, but 70% is considered average. This is because even the most hi-tech WBDF is dispersive to formation solids. The resultant 30% of drilled solids entrained in the WBDF must be adjusted to an acceptable level - typically <6% drilled solids by dilution. The dilution volume for the 30% of drilled solids not mechanically removable from this drilling fluid will be 3,509 bbls of WBDF, or 5 bbls for each barrel of gauge hole drilled.

Not only is this method both operationally and environmentally superior, but operators are able to recoup drilling costs by reusing the recovered NABF which is unaffected by the thermal process.



Modelled comparison scenario for 10,000 ft of 8.5" gauge hole. WBDF and cuttings waste stream volume vs. NADF cuttings waste volume after treatment via TCC RotoMill

Organic materials, including hydrocarbons, may be utilised to increase WBDF lubricity. With a treatment of 5% hydrocarbon lubricant added then maintained in the drilling fluid, the lubricant content of the 3,509 bbls of WBDF generated will be 175 bbls. With a lack of practical and effective solutions to remove entrained lubricant from WBDF waste streams, it will ultimately end up in the environment.

Salt is a common additive to WBDFs in an attempt to improve inhibition, but similarly current methods for removing salts from WBDF waste streams are ineffective and therefore recovered water will still contain salt. Offshore this is of slight consequence, but onshore it has significant implications for groundwater and soil contamination.

NADF on the other hand, due to its inhibiting capability, often achieves SREs equal to or better than 90%. Therefore only the 10% of solids not removed must be diluted back to solids content specifications. Drilling the same 702 bbls of formation with NADF necessitates only 1,170 bbls of dilution, or 1.7 bbls of dilution per barrel of hole drilled. Approximately 702 bbls of NADF will accompany formation cuttings and another 702 bbls of NADF will

fill new hole drilled. Therefore a total of 1,404 bbls, or 2 bbls of NADF per barrel of formation drilled, is required and is more than sufficient to dilute drilled solids to specification.

Unlike most WBDF generated and disposed of with drill cuttings, NABF can be effectively recovered for reuse. The TWMA TCC RotoMill and TCC RotoTruck reduce NABF content on drill cuttings outfall to less than 1%, a level which is proven to have a negligible impact on the environment. In the preceding comparative examples, NADF drill cuttings treated by the TCC RotoMill or TCC RotoTruck will contain approximately 166 bbls less organic material and 120 bbls less salt than WBDF waste.

The TWMA TCC RotoMill and TCC RotoTruck can be positioned anywhere to suit the project in question. Whether onshore, offshore, or in a remote location, this solution can be utilised to enable the use of NADF without harming the environment or compromising on performance.

Therefore, if a well would benefit from the use of NADF, the question from both operational and environmental perspectives is "Why not use NADF and treat the cuttings outfall?"



TWMA skip filling station on board the Maersk Discoverer

Operators increasingly understand the value and efficiency that can be gained from employing a fully integrated solution”

Successful project under way for BP Egypt

TWMA is pleased to announce the ongoing success of its contract to supply BP Egypt (BP) with an integrated solution to handle, transport and treat drill cuttings and associated fluids on board the Maersk Discoverer semi-submersible drilling rig.

The scope of work includes the installation of a skip-filling station designed, manufactured and operated by TWMA, the provision of skip and ship services to transport drill cuttings and associated materials to shore for treatment at TWMA's Alexandria facility, as well as pit cleaning services on board the rig.

The skip-filling station is integral to the drilling operation, enabling the efficient handling and storage of drill cuttings so that they can be safely transported to shore. Installed within three weeks, the skip-filling station was designed to interface with the rig's existing blower system. This feeds drill cuttings and associated fluids into TWMA's screw conveyor system which then transfers the materials into four skip-filling bays at a capacity of up to 40mt per hour – making this a highly efficient process.

Once onshore at TWMA's Alexandria processing plant, the drill cuttings and associated fluids are thermally treated via TWMA's TCC RotoMill technology, which processes and recycles the materials by separating them into their constituent parts of oil, water and solids for recycling and reuse.

Mohamed Mansour, operational fluids specialist, BP Egypt said: "Minimising our environmental footprint is a key objective for BP, and TWMA continues to deliver an efficient and reliable service to support our Egyptian drilling operations. By managing our drilling waste requirements from source to final disposal, TWMA's solutions are also providing operational benefits."

Senior operations manager for TWMA Egypt Abdelrahman

Amin commented: "Operators increasingly understand the value and efficiency that can be gained from employing a fully integrated solution to manage all their requirements. As this project progresses we look forward to supplying BP with the full scope of services which also includes the supply of advanced solids control equipment and potential offshore processing."

By providing operators with a 'cradle to grave' service, TWMA can ensure that the solution meets the project needs, therefore delivering a highly efficient service with exemplary quality and safety.

This project is being managed and executed by TWMA's Alexandria workforce with operational support from the company's Cairo office.

TWMA continuing to help shape the future of Norwegian offshore processing

In August 2012, TWMA announced it had begun work with the Norwegian Oil & Gas Association (previously known as OLF) as part of efforts to create a new standard of best practice for treating drill cuttings and associated materials at source through offshore processing.

Since this initial announcement, TWMA has continued its work with the group and is currently in the process of collecting well samples from an offshore project with a major UK operator, which will be used for ongoing studies within the group.

The Norwegian Oil & Gas Association has established a steering group to co-ordinate efforts by operators to have recognised standards for handling and treating drill cuttings and associated materials from drilling operations offshore on the Norwegian Continental Shelf (NCS).

The group involves some of the largest operators within the Norwegian sector, including Det norske and Lundin Norway AS.

As one of the global leaders for integrated drilling services and environmental solutions, TWMA has been providing the working group with expert advice and sharing its experiences of providing treatment and processing solutions for the energy industry around the globe.

Sales director, Rob O'Neill said: "We are pleased to be continuing this work with some of the largest operators within the Norwegian sector, who have come together with the Norwegian Oil & Gas Association as part of a united, concerted effort to agree a set of best-practice standards for treating drilling wastes at source."



TWMA sees benefits of new business management system

In early 2012, TWMA introduced a bespoke global business management system – C-SAM – for real-time reporting and tracking of its growing fleet of equipment and personnel.



Graham Dickie, finance director

Now, at TWMA's head office, the first phase of implementation is complete and staff are already experiencing the benefits and efficiency gains of utilising a single, integrated system. Every department within the company's head office now utilises C-SAM to capture, store and monitor data. The system allows for easy entry, update, retrieval and analysis of information and is also saving valuable time on reporting for various functions.

TWMA's entire operation, from

initial sales enquiries through to live jobs, can now be tracked and traced, generating essential information to determine how efficiently assets, stock and resources are being deployed across the company's international operations. Over time this information will build a valuable history which will be used to identify business improvements across the organisation.

TWMA plans to roll out the system to its international regions over the next 12 months

and it is hoped that streamlining processes such as this will help to facilitate further growth.

Graham Dickie, finance director for TWMA said: "As TWMA continues its global growth, this system will become an increasingly essential tool which will benefit our operations company-wide. By giving us visibility of how our assets are performing globally, it is already enabling us to improve efficiencies internally and in our operations, to ultimately provide our clients with a better service."

Events and exhibitions plan 2013

TWMA will be exhibiting at various international oil and gas events throughout 2013. For more information about where to find TWMA, visit the website:

www.twma.co.uk

5-7 March 2013

SPE/IADC Drilling Conference & Exhibition Amsterdam

RAI Congress Centre, Amsterdam, The Netherlands

6-9 May 2013

SPE OTC, Houston

Reliant Park, Houston, Texas, USA

16 May 2013

IADC Drilling Onshore Conference & Exhibition

Omni Houston Hotels Westside, Houston, Texas, USA

19-20 June 2013

IADC World Drilling Conference & Exhibition

Hilton Istanbul Hotel, Istanbul, Turkey

3-6 Sep 2013

SPE Offshore Europe

Aberdeen Exhibition & Conference Centre, Aberdeen, UK

TWMA appoints new Scandinavia region manager

In the last edition of Cutting Edge, TWMA announced plans to develop its Mongstad site into a state-of-the-art treatment facility in order to expand its Norwegian service offering and meet growing customer demand.



To support the region's continued growth, TWMA has appointed **Leif Ove Svensen** as Scandinavia region manager.

“As demand for TWMA's solutions continues to rise, it is important that we continue to deliver a high quality of service and maximise opportunities by offering operators a complete solutions package”

Svensen has over 22 years' experience in the upstream oil and gas sector and has held senior sales management roles for a range of Norwegian oil and gas service companies.

Responsible for managing the implementation of TWMA's sales strategy for the region, Svensen will play a key role in the growth and development of both the company's Stavanger and Mongstad bases.

Svensen said: "Some of the largest operators within the industry have major interests in Norway and the Scandinavia region. As demand for TWMA's

solutions continues to rise, it is important that we continue to deliver a high quality of service and maximise opportunities by offering operators a complete solutions package."

Currently, TWMA Norge employs 30 staff at its Stavanger and Mongstad bases. It supplies onshore processing, slops treatment and support services for skip and ship operations in the NCS, and recently doubled its processing capacity at Mongstad to 70,000mt per year. The recent site improvements at Mongstad

will also support future offshore processing projects in the region.

TWMA's sales director, Rob O'Neill said: "With the additional capacity at our Mongstad base, we have an increased opportunity to provide Norwegian operators with solutions which are both cost-effective and environmentally sustainable.

Svensen's experience in the region will be key as we continue to develop this important market."



TWMA's sales office in Sandnes, near Stavanger

Garry Duncan joins TWMA as Peterhead site manager

TWMA has appointed Garry Duncan as site manager to oversee operations at the company's biggest onshore processing plant in Peterhead, near Aberdeen.

Duncan's appointment comes as TWMA plans significant site improvements to expand its operations in the UK North Sea region. One of the main developments will see the manufacturing of TWMA's TCC RotoMill units moved from the company's Tullos facility in Aberdeen to the site in Peterhead. This will generate substantial efficiency gains as manufacturing, operation and maintenance of the units take place in one location.

Duncan will be responsible for the day-to-day running of the Peterhead processing facility, from managing and planning the receipt of materials on site, to the storage, transfer, treatment and ultimate disposal of all materials in an environmentally sustainable manner. Duncan will also manage the ongoing development of the facility and drive business growth by assisting in the identification of new opportunities.

The site receives large volumes of drill cuttings and associated materials from 'skip and ship' and bulk transfer operations throughout the UK North Sea which are thermally treated through TWMA's state-of-the-art TCC RotoMill units and slops treatment plant. Duncan will oversee these operations as well as tank cleaning and

associated activities at the Peterhead plant.

As site manager, Duncan will also be responsible for ensuring that environmental, safety and quality standards are adhered to by all employees, and provide assistance in the development of new initiatives, services and operational methods.

Gary Duncan has over 22 years' experience in the oil and gas industry, during which time he has held a range of managerial and operational roles, and established a successful track record for managing teams to achieve financial targets.

Neil Thomson, general manager for TWMA, said: "Gary Duncan joins TWMA at an exciting time and in this role will have an opportunity to facilitate the continuous growth of one of the company's key locations. His managerial experience will be extremely valuable as the Peterhead site undergoes this major development."

Former site manager Scott Murray will take on a new role as proposals engineer at TWMA's Aberdeen head office, where he will share his expert technical knowledge gained over ten years working initially within TWMA's offshore operations and latterly at the Peterhead facility.



“Gary Duncan joins TWMA at an exciting time and in this role will have an opportunity to facilitate the continuous growth of one of the company's key locations”

TWMA attends oil and gas careers fair

career
transition
partnership



In October 2012, TWMA attended a major oil and gas careers' fair at the Aberdeen Exhibition and Conference Centre (AECC) for people leaving the UK Armed Forces seeking new employment.

The event, which was organised by the Career Transition Partnership (CTP), attracted over 1,000 attendees who are due to leave the Royal Navy, Army, Royal Air Force and Marines in the near future.

The one-day event was a huge success and TWMA received over 60 quality applications for both onshore and offshore vacancies at its locations around the globe.

Andy Porter, HR director for TWMA, says events

like these hold the key to overcoming the skills shortage that the energy industry is currently facing: "There is a highly skilled and enthusiastic workforce with valuable transferable skills seeking employment. This is a fantastic opportunity for oil and gas companies to attract hard-working, skilled and committed individuals."

The CTP provides resettlement services for those leaving the Royal Navy, Army, Royal Air Force and Marines.



Update on Corporate Social Responsibility

TWMA is committed to its clients, employees and the communities in which it operates. We believe it is essential to build sustainable relationships with local communities and deliver solutions which are environmentally sustainable to our clients.

In recognition of this, we have outlined our commitment to managing our business to produce a sustainable positive impact on local communities and the wider environment.

Our aim is to assist oil and gas clients in maximising recycling potential and minimising the environmental footprint of their operations. We see waste as a resource and are working with operators to achieve zero environmental impact. As such we are committed to:

- The continual improvement of environmental performance through the monitoring and benchmarking of environmental resource use
- Employing best available technology, environmental best-practice and best available techniques that have the lowest environmental impact
- The continual development of our

solutions to prevent pollution and reduce environmental impacts from operational activities

- Complying with all environmental legislation, regulations, best-practise standards and guidelines which govern the environment
- Minimising the environmental impact of our own operations and working with clients and contractors to optimise their environmental performance
- The reduction of natural resource consumption and the recycling and reuse of waste materials wherever possible

Our goal is to make a positive contribution to the local communities in which we operate. We are actively involved in societies wherever TWMA is located and we constantly work towards building positive relationships with the community.

We also seek to employ a localised workforce to support our operations.

From the corporate sponsorship of local events to office charity fundraising days, we take our responsibilities to communities and social activities very seriously. In the last year, TWMA has proudly supported a range of causes in its local communities through various sponsorship programmes and charity fundraising events.

TWMA regularly reviews its policies for ongoing suitability and effectiveness. To ensure compliance with our policies we:

- Perform regular audits of all our activities, using the results to drive performance improvements
- Continually invest in the research and development of new and existing solutions to increase levels of recycling and reuse and improve product efficiency

- Seek to advance and utilise commercially robust solutions that can provide long-term sustainable uses for recovered materials
- Set company environmental performance targets which are measured and reviewed on a regular basis
- Maintain an environmental management system to meet the requirements of the environmental standard BS EN ISO 14001:2004

TWMA is committed to achieving these goals and regard it as every employee's responsibility to uphold these values. We take pride in delivering services that at all times meet or exceed the best practices of the global oil and gas industry. The long-term sustainability of TWMA's and the industry's activities depends on our ability to continually improve the quality of our solutions while protecting people and the environment.



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